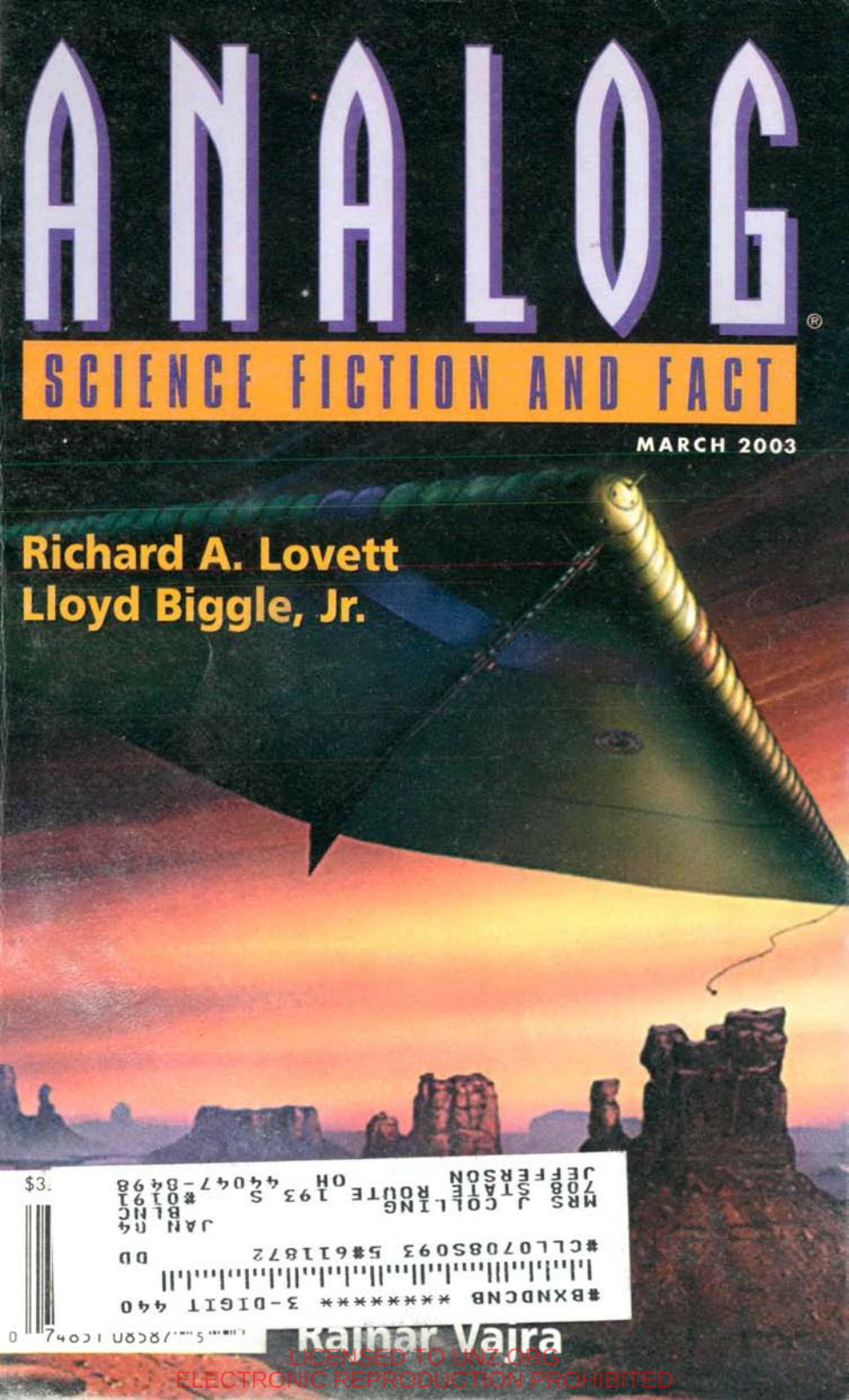
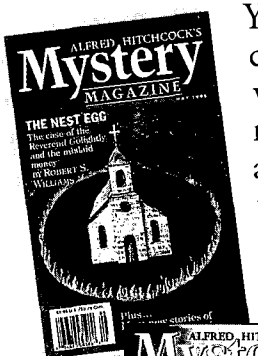


LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

MYSTERY VALUE PACK

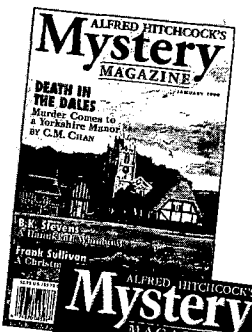
4 magazines for just $5.95!

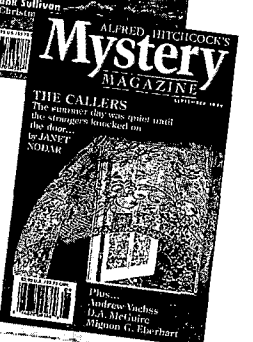
Give yourself **chills** with our value pack of 4 best-loved issues of **Alfred Hitchcock's Mystery Magazine!**



You'll enjoy dozens of captivating tales from world-renowned masters of suspense and talented new writers alike — all for just $5.95 plus shipping.

You save 50% off the regular price.





It's easy to order. Just fill out the coupon below and mail it to us with your payment. **Your satisfaction is fully guaranteed!**

PENNY MARKETING

Dept. SM-100, 6 Prowitt Street, Norwalk, CT 06855-1220

☑ **YES!** Please send me my **Alfred Hitchcock's Mystery Magazine Value Pack.** I get 4 entertaining issues for just $5.95 plus $2 shipping and handling ($7.95 per pack, U.S. funds). My satisfaction is fully guaranteed! My payment of $_____ is enclosed.(AHPK04)

Name: _____
(Please print)

Address: _____

City: _____

State: _____ **ZIP:** _____

Please make checks payable to Penny Marketing. Allow 8 weeks for delivery. Magazines are back issues shipped together in one package. To keep prices low we cannot make custom orders. Add $4 additional postage for delivery outside the U.S.A. Offer expires 12/31/03.

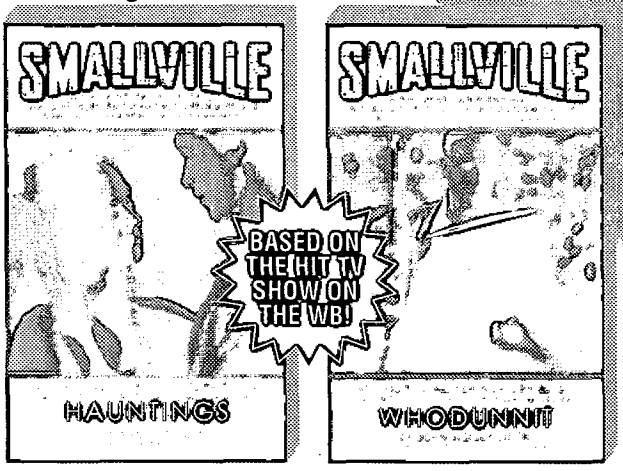
A2C-NQHVL2

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

NEW FROM ASPECT

BEFORE THE RED CAPE...
BEFORE LOIS LANE...
THIS IS WHERE THE JOURNEY BEGINS.

America's favorite super hero returns in two new original novels in the Smallville series!

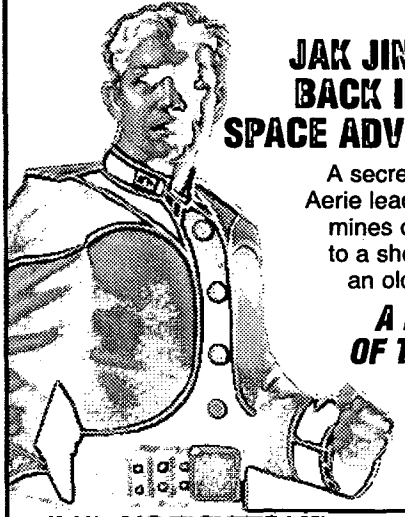


Available Now — Coming in March

Praise for the WB's SMALLVILLE

"Warm, smart and imaginative."
—Seattle Times

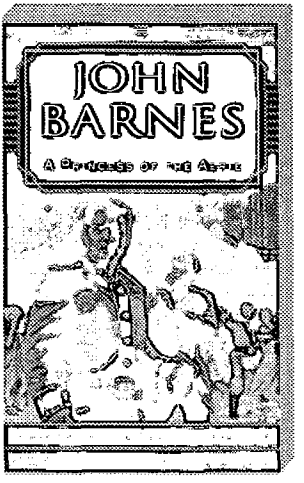
"Cleverness abounds in this flashy reworking of the Superman mythology."
—Los Angeles Times



JAK JINNAKA IS BACK IN A NEW SPACE ADVENTURE!

A secret mission for Aerie leads Jak to the mines of Mercury—to a showdown with an old enemy in...

A PRINCESS OF THE AERIE



AVAILABLE IN PAPERBACK

ASPECT WHERE IMAGINATON KNOWS NO BOUNDS

An AOL Time Warner Book Group Company

Visit our Web site at www.twbookmark.com

Smallville and all related characters, names, and indicia are trademarks of DC Comics © 2002. All rights reserved.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

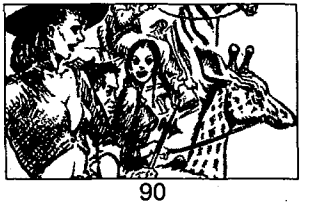
ANALOG

SCIENCE FICTION AND FACT

Vol. CXXIII No. 3
March 2003

Next Issue on Sale
February 25, 2003

40



90

SERIAL

SHOOTOUT AT THE NOKAI CORRAL (Part Two of Four), Rajnar Vajra ____ 90

NOVELETTES

EQUALIZATION, Richard A. Lovett ____ 10
THE HUMAN DRESS, David Alexander ____ 40

SHORT STORIES

PERSISTENT PATTERNS, Shane Tourtellotte ____ 58
THE PRISTINE PLANET, Lloyd Biggle, Jr. ____ 76

SCIENCE FACT

BAD SCIENCE, BAD COMMUNICATION:
THE BATTLE OVER BT, Tressa Whalen ____ 31

POETRY

THE ATOMS THAT I BREATHE TODAY, G. Solov ____ 89

SPECIAL FEATURE

UNSAFE AT ANY SPEED, Mike Resnick ____ 73

READER'S DEPARTMENTS

THE EDITOR'S PAGE ____ 4
IN TIMES TO COME ____ 68
THE ALTERNATE VIEW, John G. Cramer ____ 69
THE REFERENCE LIBRARY, Tom Easton ____ 134
BRASS TACKS ____ 140
UPCOMING EVENTS, Anthony Lewis ____ 144

Stanley Schmidt Editor
Trevor Quachri Associate Editor

Cover Art by David A. Hardy, from the private collection of Paul McAuley

Indicia on page 5
Online Chat Listing on page 75
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

June 8 - July 19, 2003

Writers-in-Residence:
Nalo Hopkinson
James Patrick Kelly
Kelly Link
Maureen McHugh
Richard Paul Russo
Howard Waldrop

Editor-in-Residence:
Scott Edelman

Deadline for Receipt of Application: Tuesday, April 1, 2003
For more information contact with SASE
Clarion 2003 c/o Mary Sheridan
E-193 Holmes Hall
College of Arts and Letters
Michigan State University
East Lansing, MI 48825-1107

Clarion Web site: http://www.msu.edu/~clarion

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

EDITORIAL Stanley Schmidt

THE RETURN OF THE MAD SCIENTIST

There's a type of character very familiar to most of us as a stereotype, now often viewed with contempt or derision, often found in early written science fiction—and to this day in movie and television thrillers. Until recently this cliché seemed far more the stuff of bad stories than of real life, but it may now be taking on a new role as a serious everyday concern.

I broach this idea cautiously and with some trepidation, because I certainly wouldn't want to suggest that the stereotype applies to all, most, or even any sizable fraction of scientists. But it may apply to a significant number, because a significant number can be as small as one. And that fact, in turn, may imply that the time has come for this type of character to reclaim a more prominent role in serious science fiction. If such people can now pose a real danger to the world at large, fiction needs to be examining such questions as how that can happen and what can be done about it.

In his book *The Science of Science Fiction Writing*, James Gunn says, "[Mary Shelley's] Frankenstein . . . became the prototype for a character who would persist throughout much later science fiction and down to present times in films and comic magazines, a character vulgarly called 'the mad scientist,' whether he is in fact certifiable or not, but more accurately called the overreacher. He is often careless. He takes unnecessary risks out of an unseemly haste. In fact, he often seems compulsive, acting not out of rational motives but frequently against his best interests." Many of Frankenstein's "descendants," such as the many nemeses of James Bond, are driven by selfish goals such as power, up to and including world domination, and they use new scientific findings and technological inventions to strive toward those goals.

Until relatively recently, this sort of thing has looked to most of us like a harmless literary extravagance, suitable for light entertainment but having little to do with the real world, past, present, or future. Print science fiction, self-consciously seeking ever greater sophistication, has increasingly shunned the "mad scientist" as simplistic and unrealistic on several levels. In particular, those writers who deal with working scientists have often sought to portray them believably, and very few real scientists have much in common with the cliché. Most of them, in my experience, really do go into science primarily because they get a kick out of finding out new things and working with the kinds of tools scientists use. Many are very actively concerned with social causes and responsibilities.

The problem that threatens to bring the mad scientist back, both as a literary device and as a real-world concern, is that some new technologies can place inordinate amounts of power in individual hands. Admittedly technology is not quite the same as science, but it is, in a real and important sense, *applied* science. You may argue that the danger is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

not misapplication by scientists or engineers themselves, but by politicians. But the fact is that technology can be misapplied either by the scientists and engineers who created it, or by politicians who appropriate it to their own ends.

Some scientists and engineers work for politicians, and may be in a poor position to see the ultimate application of an interesting problem they've been hired to work on. Or they may be so in need of employment, and better jobs so scarce, that they sign onto projects that they'd rather not work on simply because that's the work they can get. The same person may even be both scientist or engineer and politician. Osama bin Laden, I'm told, is (was?) an engineer. A person who has knowledgeable fingers in both pies is very well positioned to do a lot of damage, both imagining how a technology might be applied to political agendas, and taking an active personal role in making that happen.

People can have all kinds of reasons for going into science or technology. Many—probably most—do it because of genuine interest in the subject matter. But some can and do do it as a means to other ends. I have heard people admit publicly that they earned doctorates in biological sciences—hardly a trivial undertaking—expressly to put themselves in a better position to "destroy Darwinism." I can easily imagine someone obsessed with destructive goals, and with the innate ability to do science or engineering, going into those fields solely as a means of pursuing those goals as aggressively and effectively as possible.

As I've already said, I bring this possibility up reluctantly, because I can also imagine a hysterical counterreaction against science and technology *per se*, and that's the last thing I'd want. We need science and technology more than ever; we can, should, and must continue to embrace, pursue, and improve them. But we can no longer ignore the fact that some individuals may use them for things quite different from the pure pursuit of knowledge, and those may be able to do a lot of damage. Therein lies one of the biggest challenges of our age: finding ways to continue progress in science and its beneficial applications, while reducing the ability of individuals or small groups to abuse them destructively.

Science fiction can serve, among other things, as a laboratory for *Gedankenexperimente* to try out ideas about such questions. I certainly wouldn't want to see "mad scientists" in every story I read, or even a very large percentage of them, any more than I would want our society to try to shut down research and development because a few people might abuse their products. But I do think the basic concept is one that is coming back into some favor, and justly so, though not quite in its original form.

The high-tech megalomaniacs of early science fiction and more recent comic books seldom made much effort to seem realistic. They were rather openly

Analog Science Fiction and Fact (Astounding), Vol. CXXIII, No. 3, March 2003. USPS 488-910, ISSN 1059-2113, GST# 123054108. Published monthly except for a combined July/August double issue by Dell Magazines, a division of Crosstown Publications. One-year subscription for $39.97 in the U.S.A. and possessions, in all other countries, $47.97 (GST included in Canada) payable in advance in U.S. funds. First copy of new subscription will be mailed within eight weeks of receipt of order. When reporting change of address allow 6 to 8 weeks and give new address as well as the old address as it appears on the last label. Periodical postage paid at Norwalk, CT and additional mailing offices. Canadian postage paid at Montreal, Quebec. Canada Post International Publications Mail, Product Sales Agreement No. 260622. © 2003 by Dell Magazines, a division of Crosstown Publications, all rights reserved. Protection secured under the Universal Copyright Convention. Reproduction or use of editorial or pictorial content in any manner without express permission is prohibited. All stories in this magazine are fiction. No actual persons are designated by name or character. Any similarity is coincidental. All submissions must be accompanied by stamped self-addressed envelope, the publisher assumes no responsibility for unsolicited manuscripts or artwork.

POSTMASTER: Send change of address to: ANALOG SCIENCE FICTION AND FACT
P.O. Box 54625, Boulder, CO 80328-4625.

IN CANADA RETURN TO: Transcontinental Sub Dept, 525 Louis Pasteur, Boucherville, Quebec, J48 8E7
Executive Office: Penny Press, 6 Prowitt St., Norwalk, CT 06855
Editorial and Advertising: Analog Science Fiction and Fact, 475 Park Avenue South, New York, N.Y. 10016
Subscriptions: Analog Science Fiction and Fact, P.O. Box 54027, Boulder, CO 80322-4027

Printed in Canada

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

outrageous flights of fancy for the sake of an entertaining yarn. We still need entertaining yarns, but some of them need to be taking a fresh look at such questions as why might a *real* scientist or engineer turn his or her knowledge toward nefarious ends. What can we do to prevent or counteract such aberrations? To what extent should scientists and engineers play active roles in government? In the past I have sometimes complained that politicians knew too little of scientific and technological matters about which they were called upon to legislate. Might there be a complementary danger of their knowing too much? Or do we just need better checks and balances, and if so, what form should those checks and balances take?

And, perhaps most urgently at present, what can we do about the abuse of science and technology by other governments, or by individuals or groups not formally under our own government's jurisdiction? At this point in history it would be hard to deny that those are legitimate concerns of ours, yet there are other potential perils in allowing any government to meddle in the internal affairs of other countries. Here, too, there is a need for balance, and perhaps for new and better ways of weighing conflicting needs against each other.

And, of course, even as some stories reéxamine the threat of dangerously atypical scientists and employers of scientists, we'll still need plenty that try hard to portray realistically the vast numbers of more typical scientists and engineers. Much of the public is still full of misconceptions about such people, and since our lives are more dependent on them than ever, we really need to understand what makes them tick—that they are, in essence, human beings much like other human beings, with similar aspirations and fears and strengths and weaknesses, but maybe with some special qualities too. ■

STANLEY SCHMIDT .....Editor
SHEILA WILLIAMS .....Executive Editor
TREVOR QUACHRI.....Associate Editor
BRIAN BIENIOWSKI.....Assistant Editor
STEPHANIE RATCLIFFE .....Editorial Assistant
MARY GRANT .....Editorial Assistant
VICTORIA GREEN .....Senior Art Director
JUNE LEVINE.....Associate Art Director
CAROLE DIXON.....Senior Production Manager
ABIGAIL BROWNING.....Manager, Subsidiary Rights and Marketing
SCOTT LAIS.....Contracts and Permissions
JULIA McEVOY .....Manager, Advertising Sales
CONNIE GOON .....Advertising Sales Coordinator
BRUCE W. SHERBOW.....VP, Sales and Marketing
SANDY MARLOWE .....Circulation Services

PETER KANTER
Publisher

CHRISTINE BEGLEY
Associate Publisher

SUSAN KENDRIOSKI
Executive Director,
Art & Production

Published since 1930

First issue of Astounding
January 1930 ©

ADVERTISING REPRESENTATIVE David Geller Publishers' Rep. (212) 455-0100
EDITORIAL CORRESPONDENCE ONLY analog@dellmagazines.com

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Be in Style...
with Heavy Cotton T's from
Asimov's Science Fiction and Analog Science Fiction and Fact

Mail to: Dell Magazines Direct • 6 Prowitt St.
Suite Promo T • Norwalk, CT 06855-1220

Asimov's Science Fiction T-Shirt (AST)

SOLD OUT ____S SOLD OUT ____M ____L ____XL ____XXL **$9.99 each** $_____

Analog Science Fiction & Fact T-Shirt (ANT)

SOLD OUT ____S SOLD OUT ____M ____L ____XL SOLD OUT ____XXL **$9.99 each** $_____

Shipping & Handling _____ x $2 $_____
(Add $2 per T-shirt or $6 for three or more.
Deliverable to US addresses only) **Total:** $_____

❑ Enclosed is my payment. Please charge my: ❑ VISA ❑ MASTERCARD

CARD #_____ EXP. DATE: ____ / ____

CARDHOLDER'S SIGNATURE_____

NAME _____

ADDRESS _____

CITY _____ STATE_____ ZIP_____

Order online or mail the order form with your payment today.

NSTS62

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A SAD SUMMER FOR SCIENCE FICTION

The summer of 2002 was another time for losses in the science fiction community, with three deaths that will be particularly felt by *Analog* readers occurring within approximately two months: Laurence M. Janifer; Lloyd Biggle, Jr.; and Robert L. Forward.

LAURENCE M. JANIFER, 1933–2002

Laurence M. Janifer died July 10, 2002, at Summit Hospital in Oakland, California, of chronic obstructive pulmonary failure. Born Laurence Mark Harris in Brooklyn, New York, on March 17, 1933, he was probably best known to recent *Analog* readers as the author of the wry and clever adventures of Gerald Knave, Survivor. Our older readers will also remember such stories as "Charley de Milo" and his collaborations with Randall Garrett, as Mark Phillips, on telepathic-spy stories including *That Sweet Little Old Lady*. He also wrote a wide variety of other stories and novels, science fiction and otherwise, alone and with others, under his own name and a multitude of pseudonyms including Andrew Blake, Tom Beach, Robert J. Cassiday, Bernard L. Elliott, Laura Mae Jansen, William Logan, Kenneth Malone, and Thomas O'Connor.

In addition to his highly diversified writing career, he lived a highly diversified life, having also worked as a literary agent, editor, musician, and comedian. He lived in New York City most of his life, but also spent a few years in Sydney, Australia, and finally wound up in California. He was married and divorced five times and is survived by a brother, two daughters, a son, and a grandson, to all of whom we extend condolences.

LLOYD BIGGLE, JR., 1923–2002

Lloyd Biggle, Jr. died September 12, 2002, after a twenty-year struggle with leukemia and cancer. Born April 17, 1923, in Waterloo, Iowa, he served in the 102nd Infantry Division in World War II and was wounded twice in action. After the war, he earned an A.B. from Wayne State Uni-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

versity and M.M. and Ph.D. degrees from the University of Michigan. A musicologist and skilled clarinetist, he taught at the University of Michigan and Eastern Michigan University in the 1950s, and concurrently began writing professionally. He became a full-time writer with the publication of his novel *All the Colors of Darkness* in 1963, and remained one—and a resident of Ypsilanti—for the rest of his life. Active and well known in both science fiction and mystery, he had recently returned from a period of inactivity forced by health problems and produced an impressive succession of *Analog* stories and articles shortly before his death.

He was founding Secretary Treasurer of the Science Fiction Writers of America and founder of the Science Fiction Oral History Association. He is survived by Hedwig (Janiszewski) Biggle, his wife of 55 years; daughter Donna Emerson; son Kenneth; several other family members; and a multitude of young and not-so-young writers and fans who fondly and gratefully remember his friendship and support. Memorial contributions may be made to The Leukemia and Lymphoma Society of White Plains, New York, or Arbor Hospice, of Ann Arbor, Michigan.

ROBERT L. FORWARD, 1932–2002

Robert L. Forward, well known in both scientific and science-fictional circles, died of brain cancer at his home in California on September 21, 2002. Born August 15, 1932, in Geneva, New York, he graduated from the University of Maryland with a B.S. in physics and a commission in the U.S. Air Force, in which he served in the U.S. during the Korean War. He later earned an M.S. in applied physics from UCLA and a Ph.D. in physics from the University of Maryland. He worked for 31 years at the Hughes Aircraft Company Corporate Research Laboratories, began writing science fiction, and took early retirement in 1987 to devote more time to that and to Forward, Unlimited, his own aerospace consulting business, whose clients included NASA and the Air Force.

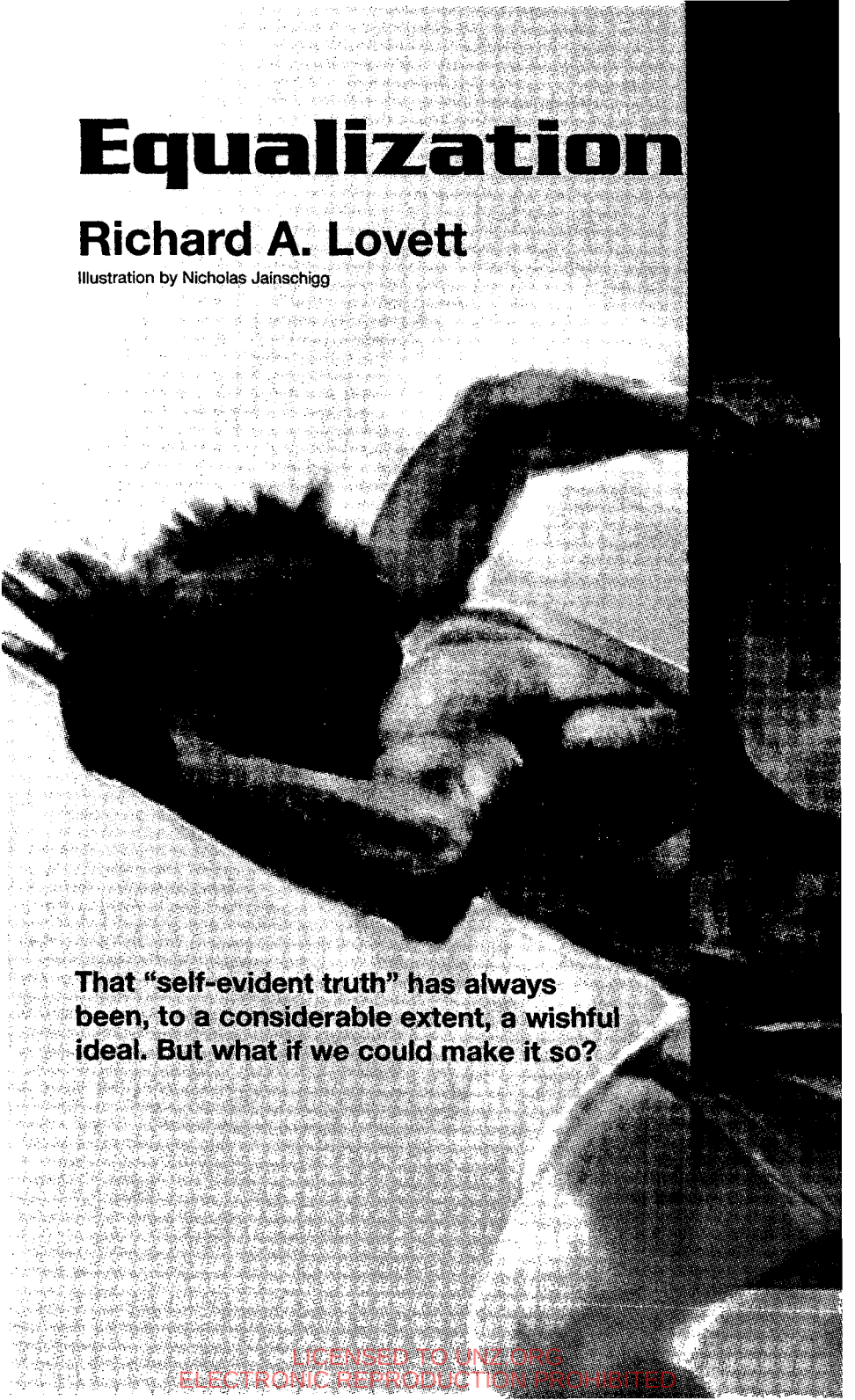
Holder of numerous patents and author of many papers, he made both experimental and theoretical contributions to several areas of research, including gravitational waves and exotic propulsion systems. His 11 novels, beginning with *Dragon's Egg* (involving tiny, fast-living residents on the surface of a neutron star), are noted for an exceptional combination of scientific rigor and a wealth of the most imaginative ideas in all of science fiction.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Equalization

Richard A. Lovett

Illustration by Nicholas Jainschigg



That "self-evident truth" has always been, to a considerable extent, a wishful ideal. But what if we could make it so?

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Awareness arrived as a riot of colors, swimming in patterns that pulsed to a drumbeat that seemed to shake the world. My ears roared. I had no idea where I was—I barely knew *who* I was.

That much was normal. In the past two decades, I've gone through it enough times that I'm almost used to it. But then, with a suddenness that was nearly palpable, everything snapped into focus. The colors faded to the muted pastel of an ordinary ceiling, and the drum and roar receded to the murmurs of heartbeat and breath. I was lying on my back on a cot in an equalizer's office.

I shouldn't have awakened so quickly. Something must have gone wrong, aborting the procedure before it had truly begun. I tried to sit up, wanting to see more of the room than the ceiling, but the restraining straps stopped me with a jerk that nearly pulled a muscle.

"Now, now," scolded a voice somewhere to my right. "You're an old hand at this—you should know better than to move around right after you've been equalized." The owner of the voice drifted into my field of vision. Short, balding, and slightly paunchy, he was wearing an equalizer's lab smock, but he wasn't the equalizer who'd put me to sleep however many moments before. And the portions of the office the straps allowed me to see, I now realized, were subtly different. Where earlier there'd been a bookcase, a coat rack now stood. Where there'd been a photo of a desert sunset, there was now a watercolor painting of fir trees and snowy mountains. I'd gone to sleep in Cape Town, South Africa. At a guess, I was now on the North American West Coast.

"It's over then?" I asked, surprised by how readily I found my voice.

"Of course. Once you get your wits back, you're all set for another year—" he consulted his clipboard, "—on the track. First, though, you have to get reoriented." He unfastened the straps. "You can sit up whenever you're ready."

I raised a hand and brought it into view, carefully curling the fingers into a fist, then relaxing them. Something was definitely wrong. The motion looked fluid and natural, with none of the jerks and twitches that should have been there as my mind fought to control a new body. I flexed the hand again, then automatically scratched an itch. The itch vanished—I'd found it first try.

That made me more uneasy than ever. Even though it was foolhardy to consider getting up yet, I had to find out what was going on. Carefully, I propped myself up on an elbow, then swung my feet to the floor. Out of the corner of my eye, I could see the equalizer. "You're getting the hang of it quickly," he said. "Whenever I work with one of you, I'm always amazed by how fast you athletes adjust."

"That's because we're trained to be sensitive to our bodies," I mumbled. "But—" I broke off. *I'm not having to concentrate*, I'd almost said. But why tell *him*? Nothing good could come from that.

Trying to walk with a studied stride (but actually moving with inexplicable ease), I crossed to the equalizer's full-length mirror. "Let's see what I'll look like this year."

The figure staring back at me was tall and small-boned, with the nearly cadaverous slimness of the professional distance runner. It was wearing a red-and-white tracksuit, and reassuringly, it wasn't my previous body. The equalizer was right, the mind transfer had indeed been successful.

Still, something was wrong. My coordination was returning far too quickly. Already I felt as though I'd been in this body for hours. Furthermore, it looked familiar. At one level, that wasn't surprising. Even though recent advances in equalization have made track and field a wildly popular sport—a gambler's paradise in which most races end in sprint finishes—there are only a few hundred professional runners worldwide. It's not uncommon to recognize a new body.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Tracking down the training patterns and racing strategies of the body's prior owners, in fact, is a much winked-at, if technically illegal, aspect of the sport. Yes, it does give you an advantage, but if everyone obtains the same advantage, then it's not really unfair, right?

This was different. In recent equalizations, I'd been in South Africa, Australia, Japan, Kenya, and Finland. Wherever this body had been, I'd never seen it in any of those places—at least not used by anyone who knew what he was doing.

So, where have I seen it before? I wondered. Then, realizing that knowing winks or not, it's unwise to think such anti-egalitarian thoughts in an equalizer's office, I tried to put the whole idea out of mind. But it was no use. Like a dog worrying a bone, I kept coming back to it, first searching recent memories, and then older ones. That thick, tightly curled hair was distinctive, but I couldn't remember it on any of my previous competitors. I reached further back in memory, and suddenly found a possibility. It was preposterous—so preposterous that I almost dismissed it. It was also easy to confirm. Feeling silly, I bent down and pulled up the right leg of my warm-up pants. And there it was, just where I remembered it, an inch-long scar, somewhat faded with the years, still present as a souvenir of a time long ago, when I'd collided with a picnic bench while playing catch at the crèche.

I was dumbfounded. Oblivious to my surroundings, I stripped to my shorts and examined my body carefully. Somebody—or rather, several somebodies—had taken good care of it since I'd last seen it. The muscles were taut. There was no excess fat. There were a few more scars, but no signs of surgery. I tested the ankle I'd sprained several times as a child, and found it strong and apparently stable, although only a good workout would show for sure.

Abruptly, I remembered the equalizer. I should tell him and be re-equalized, I thought, as with exaggerated care I went through the motions of dressing. Keeping this body is anti-egalitarian. I already know how to use it—I'll have an unfair advantage. Besides, if it's anywhere nearly as good as it once was, there's been a big mistake. I don't deserve it; I had too good a season last year. But I didn't speak. *Social duty be damned,* I thought, *I want my body.*

That thought struck a responsive chord, and suddenly I was fourteen years old again, standing before my first equalizer.

I'd been simultaneously nervous, honored, and excited. Nowadays, they routinely equalize children at that age, and there's talk of dropping the threshold to twelve. But when I was decanted, nobody under fifteen had ever been equalized, and most people had to wait until they were sixteen. It was only as I approached my fourteenth birthday that the eggheads decided that the fourteen-year-old brain was well enough developed to handle the shock—and budding athletes such as me were the first ones to be given the opportunity. I now suspect that we might have been viewed as expendable test subjects, but with the smugness of youth I presumed we'd been chosen because we were the most deserving. For two years, I'd been the fastest in my crèche, largely due to the luck of the genetic draw—the rare fortune of a runner's mind naturally appearing in an athletic body. I was anxious to prove myself against a cadre of equally good teenagers.

"Aptitude diagnostics show that you have two options," the equalizer had begun. "Thanks mostly to all the training you've done, your body will definitely become a distance runner. Your mind, on the other hand, can either be equalized into premedical school or remain in athletics. You're fortunate to have a choice. Which would you prefer?"

"I'll go with my body," I'd replied automatically.

The equalizer gaped in horror.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Young man, that's one of the most anti-egalitarian statements I've ever heard. If it weren't for your age, I'd put a reprimand in your file. As it is, I'm tempted to send you into premed just to teach you a lesson."

I couldn't believe my ears. Running was all I cared about, and now I was going to lose it, just because of one stupid remark. "I—I didn't mean it that way," I managed to stammer. "I just meant that I wanted to go into the same career as this body. I know I can't keep it. That's—that's obvious."

The equalizer sat silently for a long time. When he spoke, his reproach was surprisingly gentle. "I think you at least wanted to keep an eye on it, didn't you?"

I didn't know what to say. With a single computer stroke, this man could erase my dreams. He himself might be outranked by his own equalizers and the faceless monolith of Equalization, but even a low-level equalizer is the closest thing to God a teenager ever sees. By comparison, coaches and school principals were nothing—and besides, in school there was a tendency for old transgressions to be overlooked as equalization shifted the memories, if not the faces, of teachers and coaches. Here, for the first time in my life, I was looking at a truly permanent decision.

And yet, there was something about the equalizer's attitude, something that inspired confidence. To my dismay, I found myself nodding. "I—I'm afraid so, sir. I know it's wrong, but I've put so much training into this body that, well, I'd kind of like to see what happens to it."

"I thought so. But that can't be. If you become a runner, it and your mind will be equalized into separate academies. There's no guarantee that either you, or it, will ever graduate onto the professional circuit."

I knew that, of course. However permanent your choices at First Equalization may otherwise be, you can still wash out of your chosen academy. People and bodies that don't make the grade become factory workers and shop clerks. I sometimes envy them for only having to be equalized when they get promotions or hit those magic birthdays when it's everyone's turn. But generally I only feel that way when the lights are spinning as my consciousness fights for control of yet another new body. At age fourteen, all of that lay in the future.

"Do you still want to be a runner?" the equalizer asked.

"Yes, sir. That's all I ever wanted, as long as I can remember."

"You realize what will happen if you do? You're unusually competitive. To balance that, you'll always get an inferior body. Running won't be as easy as it is now."

"I know, sir. That's okay. I believe in equalization."

The equalizer again sat quietly, his gaze still centered on me but his attention seemingly elsewhere. I fidgeted, then tried to mask my unease by mentally tracing patterns in the weave of the carpet. I had the uncanny feeling he was reading my very soul, ferreting out secrets I was afraid to admit even to myself.

When the equalizer finally spoke again, my heart leaped, but his words were bland. "Maybe you do, Andru, maybe you do. Well, I won't punish you this time. In the future, though, you'd better watch what you say, or someday you'll be facing serious charges. Now get out of here and come back on Athletic Equalization Day, next month."

I had fled, grateful for the decision but smarting under the rebuke. *I believe in equalization*, I'd told myself. *Or at least I want to believe. Isn't that good enough?*

". . . here, take a drink. You stood up too fast. You athletes are all the same; you think you can do anything. Come over here and sit down. Do you need help?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

I wondered how long I'd been standing before the mirror. Too long, obviously. Luckily the equalizer had misunderstood.

"Thanks." I murmured. "I guess I did push things a little, but I think I'm okay now. Just tell me where I live, and I'll be on my way."

"You're sure? Well, you athletes are a self-sufficient lot. Guess it goes with the trade. You're in Vancouver, British Columbia. Welcome to Canada, and all that. If you like the outdoors, there's a lot of it, not all that far to the north—whichever way that is. Downtown is all linked into a pedestrian mall with skybridges between the buildings and all that stuff. It rains a lot around here, or so they tell me. Me, I stay indoors. Speaking of which, you live in . . ." he consulted his notes, "Arco-block 51C."

I nodded. Normally, I have to jot these things down, coming out of equalization, or I'll forget them. Today my memory seemed preternaturally sharp. It was as though I'd spent all the years since First Equalization somewhere between my second and third beers, without the benefit of a good buzz, and was only now sobering up. Intellectually, I'd long known that mental acuity is part "mind," part "brain." That was why equalization works for doctors, lawyers, artists—and equalizers. If your mind is sharper than needed for your profession, equalization will blunt it with a poor-grade brain. If your mind is a bit dull, equalization will match it to an unusually efficient one. I think it has something to do with neurotransmitters and brain architecture, although I've never bothered to read up on the biochemistry. I'm innately fairly bright—an advantage, even in athletics—so I've never had the experience of being put in an intelligence-boosting brain. I wondered if it would feel as though you were always jacked up on caffeine. Or would it simply feel like being perpetually on one beer, rather than two?

The equalizer was continuing to spout numbers. "You have apartment 3702. The door's already keyed to your new thumbprint. Don't try to walk—it's over two kilometers. There's a well-developed slideway system, with maps every block." He put a hand on my shoulder. "Run with the pack," he intoned as though it were an official benediction, rather than something he'd apparently made up himself. "And remember that anyone should always be able to win. Win your share, but for the sake of Equalization, let us hope that both your victories and your losses are by the slimmest possible margins."

It was my last chance for honesty. *If I get caught,* I thought, *they'll have no mercy.* But I was already committed, so I shook the equalizer's hand, mumbled a few platitudes, and with feigned caution picked my way through the equalization chamber and into the corridor outside.

I didn't go straight to my apartment. I felt too good, too much alive, to be cooped up. Besides, tomorrow would be the regional Shakedown Classic—always the day after equalization—and I wanted to try out my body. Theoretically, the best way to do that would be to find a terminal and ask the Net where the local pros trained. But a professional track wasn't safe; I wanted to test my speed, and the results might raise eyebrows among knowledgeable observers. So I drifted with the slideway, looking for a drop-in health club.

I found one right away, although the walkway had carried me past it before I saw the sign. I got off at the next junction, doubled back to the entrance, and found the usual assortment of ball courts and exercise machines. I'd figured that the only place to run would be in the rainy outdoors that my equalizer had apparently never seen, but a sign informed me that this place had actually managed to cram a 400-meter tunnel track into the perimeter of an office building a half-dozen floors above me. The locker room, pleasantly enough,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

was on the same floor as the track.

I'd forgotten how cramped such places are, especially compared to professional facilities. I wasn't claustrophobic, though, and I could tolerate an hour or so of low ceilings and narrow passageways.

I pulled off my warm-up suit and tossed it into a storage locker, thumbing the ID panel to authorize the charge. Another thumbscan opened the door to the warm-up room.

Even though it was the middle of the afternoon, the room was nearly full. As I picked my way to an open floor mat, I caught several hastily averted stares and could almost feel the ripple of excitement as people saw my red-and-white uniform. A maple leaf decorated its front side, and in case people missed that, the back of my singlet proudly proclaimed "Team Canada." At one level, all of that was silly. Yesterday, I'd been part of Team South Africa, and next year I could easily be Brazilian. It wasn't the regional icon *per se* that caught attention: it was what it said about my status as a runner. I would have gotten nearly as strong a reaction if I'd still been in my South African togs. The uniform simply announced that I was a top pro, and that always drew attention.

I was used to that response—I sometimes get it on the slideway, as well—but this time I'd rather not have been noticed. For a moment, I considered leaving, then changed my mind. No one would be likely to report me—most of them wouldn't be able to distinguish an exceptional workout from an average one.

As I began my usual stretching routine, I was startled to discover just how stiff my muscles were. The problem was tension, I decided. I was afraid Equalization would catch its error before I had a chance to capitalize on it. Or worse, it might catch me before I'd even decided *what* I wanted to do. I could win tomorrow's race easily, of that I was sure. But I wanted more. I wanted to do something really significant—something I could remember with anti-egalitarian pride no matter how they punished me. I'd only get one opportunity before Equalization would be alerted that something was amiss. It wouldn't give up until it learned the truth.

Still fretting, I trotted onto the track. I did my first lap slowly, moving no faster than the better recreational runners. A large cluster of them soon formed around me, enjoying the thrill of keeping pace with a professional. *They're as anti-egalitarian as I am*, I realized. *They envy my speed. And equalization allows them—no, encourages them—to do so, just as long as I'm not a member of their own class. No wonder professional sports are so popular. Why didn't I see that before?*

Then I put aside such thoughts. I was in my element, running and listening to my body, looking for aches or twinges that might reveal old injuries or present weaknesses. When I found no problems, I picked up the pace, smiling to myself as one by one my companions fell behind. I was running lightly and smoothly at just a little faster than my previous body's natural training pace. My coordination was perfect. The ankle was strong. It had been years since I'd felt so good. *Mind and body belong together*, I thought, and for the first time there was no accompanying twinge of conscience.

For the last 400 meters, I sprinted flat out. *Got to find out what I can do.* By the time I reached the finish, I was gasping for breath, but elated. I couldn't believe my watch. It was the best 400 I'd ever run! In fact, it was the best that any 10,000-meter runner I knew of had ever run. If I could do that well on this—a distance that had never been my specialty or my body's—what could I do in the upcoming race?

"Go for it," said a voice at my elbow.

"Huh?" Startled, I turned and found the owner of the voice, a graying, bearded old man wearing a nondescript

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

warm-up suit.

"Go for it," the stranger repeated. "Tomorrow, at the Shakedown."

I didn't like the way he was almost reading my thoughts. "Go for what?" I asked.

The old man shook his head. "This isn't a good place to talk. Let's take a cool-down lap."

Without waiting for a reply, he stepped onto the track and jogged down the slow lane. Fearing a trap, I hesitated, but my need for answers outweighed my apprehension. In a few strides I caught up with him, then did my best to match his uncomfortably slow pace. "Go for what?" I asked again.

"Not just the win. Think big. Go for the record."

"The record . . ." I repeated numbly. What did this man know? Had he been timing me? And if he had, why was he toying with me? Why wasn't he already on line to Equalization?

"Yes, yes," He seemed impatient, talking in a low, urgent tone. "The *world* record. No one has set a world record since before Equalization, but you can do it. But you've got to do it tomorrow, before they catch you. We can't shelter you forever."

"What are you talking about?"

"Look, Andru—yes, I know who you are—why else did you keep that body?"

Why did *I keep it?* I wondered. *Largely because it felt so natural, although even at the beginning, that probably wasn't the only reason.* But I didn't voice those thoughts. "What do you know about my body?" I asked instead.

"Enough. There's no time for explanations. It's a big risk talking to you, even here. Listen. You're safe until the race, but not beyond. You can't keep that body much longer, no matter what. So run that record tomorrow if you want a chance to strike a blow at Equalization."

There was more to the last comment than I could respond to in a single breath. "Blow?" I echoed dumbly. "I'm not a revolutionary. I'm just a runner. I don't know anything about politics."

The old man flapped his hands like he was shooing mosquitoes. "Then I go back to my earlier question: Why did you keep that body?"

This time I knew the answer. "To run."

"Maybe *running* is your politics. I'm just saying that if you want to do it, do it soon."

"I don't even know if I'm trained. What happens if I can't make it?"

"Then you're done for, and several other good people are too. We may all be done for even if you succeed, although that's not so certain. And at least we'll have something to show for our efforts."

I started to reply, but the old man cut me off. "Company coming," he hissed. "Change the subject. Tell me about how you train."

Damn, I thought. His comments had raised more questions than they'd answered. But he was right, so I obliged. "That depends on the body. If I find that I have a good finishing kick—" A moment later, several other runners caught up, and I was once again flanked by a small pack of admirers. They were still with me a few minutes later, when the old man slipped away, picked up a dilapidated sport bag, and vanished into the growing crowd of slideway commuters.

I continued to ponder that strange conversation as I found my way to my new apartment. Absentmindedly, I thumbed the lock and stepped inside. Then I stopped to survey my new abode. *Equalization is very good about such things,* I thought. The furniture layout and room design looked familiar, as did the neo-modern painting over the couch, but the details were subtly changed. *From Equalization's point of view, apartments are like people,* I realized. *Each is different, but the differences can be adapted to cancel out.*

My reverie was interrupted by a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

rustling from the bedroom. A moment later, a woman in a wrinkled red dress came into view, casually flicking strands of long, black hair from sleep-blurred eyes.

"Oh, there you are," she greeted me. "Sorry to meet you like this. I was expecting you a couple of hours ago. I got tired of waiting, so I took a nap."

"I'm sorry. I stopped for a track workout."

"Oh!" she exclaimed. "Should you have done that? I can't even imagine taking a walk right after equalization. I have a hard enough time not tripping over my own two feet." She brushed her hands across the front of her dress in a vain effort to sweep away the wrinkles. "For that matter, look at me now, and it's been two days since my own equalization. You could have gotten hurt and ruined your whole season!"

"I know, I know," I soothed, cursing myself for my honesty. "That's how we runners are—we've got to test the new body at the first opportunity. That's why there's a race tomorrow." It was a reasonable explanation, as far as it went. Even after a normal equalization I might have done something similar.

She accepted it, and abruptly changed the subject. "What do you want for dinner? Since you're racing tomorrow, I suppose you don't want to eat anything with a lot of meat or fat."

She knows athletes, I thought. *She's probably been with at least one before.* I don't always get a woman—it's an incentive that Equalization doles out after a good season as a way to keep you working to win: rewarding you with sex, even as it penalizes you with a body that makes it more difficult to achieve the same reward next year. By sheer determination, I'd qualified for a companion now for three years in a row, and I'd noticed that they tended to be equalized on the same schedule as I was—just as, apparently, this woman had been between her previous assignment and me. For the first time, I wondered whether the women really need to be re-equalized each time they change assignments, or if it's simply to break up emotional attachments—there's nothing like being equalized halfway around the world to force you to start a new life—but it seemed impolite to ask, so I too turned my thoughts to food. "Right. Let's have something simple. I don't want to shake up the new body too much. How about spaghetti and a small tossed salad?" An unpleasant memory from childhood flashed before me. "Hold the onions on my salad. Raw onions give me indigestion."

"What? How'd you learn that so soon?"

"Well, uh . . ." *Got to watch my tongue,* I thought. Almost at random, I reached for an excuse. "I said that wrong. One of my earlier bodies was allergic to raw onions. I, uh, got confused. But please, no onions."

She nodded. "I understand. And it's okay to be confused, even if you body-conscious athletes aren't supposed to show it. In my trade, you're not supposed to get your bodies mixed up, either, but everybody's done it." She flashed a crooked grin that revealed anything-but-crooked teeth. "I'm blonde, right?" Without waiting for a response, she busied herself with the kitchen console and began programming dinner orders.

I ate in silence, at first out of worry that I might make another mistake, then out of awe, as each bite triggered a flood of nearly forgotten memories. The senses are part of the body, not the mind, and apparently, the mind never completely adjusts. As I savored each bite, I realized that I hadn't really tasted my food since my first equalization.

At last, pleasantly full, I pushed my plate away and leaned back in my chair. "Don't let me eat any more," I announced, "or I'll be unfit to run tomorrow. In fact, to keep me out of mischief, why don't you let me clean up?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

She started to protest, but I cut her off. "Yes, I know that's your job, but tonight *I* feel like doing it." I carried the plates to the kitchen. "Don't worry," I called back, "this doesn't mean you've done anything wrong."

"Then what *does* it mean?" she retorted, her voice sharp, and tinged with something that might be fear.

I returned from the kitchen. "I wish I knew. Somehow it just seemed right." I shrugged. "It's been a strange day." I picked up the remaining dishes. "Let's talk about something else. Tell me about yourself."

She was startled. "What do you want to know?"

"Well, for a start, who are you?"

"I'm your consort. I thought that was obvious."

"Yes, but what else can you tell me?"

"I–I don't know what you mean."

I disposed of the last of the garbage and returned to the dining room. "What's your name?"

She flared again into anger, this time without the fear. "I don't have a name. It's anti-egalitarian. At our crèche, nobody got names."

I'd heard of such crèches, but they're rare. Even the most fundamentalist disciples of equalization appreciate the convenience of not having to address everyone as "Hey, you."

"So, what do I call you?"

For a moment, I thought she really was going to suggest "Hey, you." But when she spoke, it was so softly I could barely hear. "Anything you want. The last guy I was assigned to sometimes called me Dimples."

"Which you no longer have."

"True." Her eyes were downcast, but her voice carried an undercurrent of scorn. "I bet you'll think of something." Before I could figure out what I'd done to earn that response, she drew back her shoulders, squared her chin, and defiantly met my gaze. "What's it matter to you, anyway? Your status guarantees you a Class 9 consort. In my present body, I'm at least that." Her anger subsided into uncertainty. Hesitantly, she rose to her feet and stepped back from the table, so that her full body was on display, the gay dress suddenly appearing ridiculous. "Or do you think I'm overrated? Tell me if you do."

My mind reeled. Yesterday I wouldn't have cared what my consort's name was. Now, I was immensely disturbed that her crèche had been so interested in uniformity that it hadn't even bothered to give her one. Even more perplexing was my desire to treat her as more than what Equalization had created her to be. Still, she *was* lovely. And she was so obviously afraid I would give her a bad review. "No," I said, "I wouldn't be surprised if you're a bit underrated."

The next morning, I woke early. Tension knotted at my stomach. *I can't do it,* I thought. *The world record is something better than 26 minutes. I'm not even sure precisely what it is.* With sudden resolve, I sprang out of bed and strode to the information terminal, lodged in a corner between my consort's dressing table and my own, suitably masculine, dresser. I sat down and leaned closer to the screen. "Library request," I whispered, belatedly remembering my still-sleeping consort. "Suppress voice response. Visual display, track records. Ten thousand meters, outdoor track. Priority: Team Canada." There was a moment's delay while the screen flashed "SEARCH IN PROGRESS."

I'm always amazed at how easy it is to get anti-egalitarian information from the Net. Maybe it's just a concession to reality: as long as people have access to telecommunications, it's useless to restrict information. Maybe Equalization really doesn't care what you know, so long as you don't act on it. Either way, the information is plentiful, although usually logged in such a way that a standard search wouldn't find it by accident. I didn't know whether "Team Canada"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

would prove to be a recognized priority code, but if it wasn't, I knew a dozen others. They weren't really codes: just commands telling the Net that you really did want a full search. As far as I could tell, they worked for anyone. They merely forced you to admit—more to yourself than to the Net—that you really did understand what you were doing. Subtle, but effective.

I sometimes think Equalization erred by not sending me into premed. As much as I love running, it doesn't fully occupy my mind. Even in my "two-beer" state, I had more time to think than I really wanted. One of my interests is history, and over the years I've learned a lot about the beginnings of Equalization.

Initially, the mind-transfer technique was used for tourism—"go live in Borneo for a year as a native tribesman"—or for sex clubs that seem truly weird in today's world, where relationships are already as transient as bodies. The technology grew up in a hurry, though, when a mid-sized Asian nation was caught trying to equalize its military into squads of super-soldiers. The ensuing war was brief but vicious: the super-soldiers were apparently quite good, but too few in number to hold off an alliance of deeply frightened neighbors. Equalization was born in the aftermath, when government and industry began licensing the technology in an effort to control it. Within a year, someone had the notion of organizing workers into guilds whose members were guaranteed to have equal competence, and Equalization soon grew to enjoy its present world-girdling power. But it appears to have remembered the lesson of that Asian war: to build lasting power, being able to write cultural mores and the rules of economics is far more effective than military might. If that power is bolstered by no more legal authority than is absolutely necessary, your subjects never even realize they've been conquered.

That, I presume, was why my screen could now light up with a page of the most anti-egalitarian data imaginable (although a discreet hit counter did tell me that only 134 other people had seen fit to visit this site in the past twelve months). And there, highlighted in red, was the record: 25:48, run fifteen years before Equalization by someone named José Enrique Fernando Gonzales. *Why did he have four names?* I wondered irrelevantly.

A swish of fabric and the padding of footsteps behind me announced that my consort was awake and out of bed. "You're an early bird," she said as I hurriedly blanked the screen. As I swung toward her, she dropped her gaze to her hands, and for a moment I thought she was preparing to tell me that she was the one who'd be asking to be reassigned. That doesn't happen often, but sometimes Equalization matches up people who just don't fit. Personalities are harder to equalize than bodies, minds, and apartments.

Instead, she sat down at her dressing table and rummaged in a drawer until she found a nail file. "Don't get this wrong," she said as she scraped invisible changes into the curve of her fingernails, "but one of the things I hate about being assigned to you guys on short equalization cycles is that I'm six months into the rotation before I figure out the best way to fix my hair, do my nails, or even what kind of clothes work best on my new body."

"So you're a regular on the athletic circuit? I'd wondered last night, but I was afraid it was a rude question."

"And that stopped you?" The half-smile robbed the words of offense.

I chuckled. "Ouch."

"Yeah, well, don't do it again." She was working so industriously at her fingernails that I couldn't tell if she'd meant the comment to be playful or serious. For that matter, I wasn't sure what "it" was. Being rude? Asking questions? Not asking questions? And again, what made me care about such things, anyway?

Three fingernails later, she set the nail

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

file aside. "You're my second athlete," she said. "Last year, I was with a pole vaulter."

"The one who called you Dimples?"

"Yeah. He was a real jerk. I didn't like that nickname, and he knew it. It made me feel like a silly little girl. I was testing you, trying to get you to prove that you athletes are all the same, but you wouldn't rise to the bait. That's when I knew that however many strange questions you asked, I was staying with you. The pole vaulter was nearing the end of his career—one of those guys who's been doing the same thing for so many years that they're starting to lose incentive—and he hadn't saved enough money for a real retirement. He's still at the top of the standings, but once Equalization realizes he's merely going through the motions, he'll be out, with nothing to do but work as a trainer in a health club and bore everyone with stories of his glory days. He knows that's coming, and he took his frustration out on me. Nothing was ever good enough."

"Did you report him?"

"No. I've known a few women who tried to curry favor with Equalization that way, but it never works. The spying goes in your file, and seems to count against you. However useful you may have made yourself to Equalization, you've diminished your value as a consort. You never again get a good assignment, and the last thing I want are more guys like that pole vaulter.

"Before him, I was assigned mostly to university types. Now there's an odd gig. The young scientists, at least the ones who've earned consorts, go up the ladder fast—a new equalization each year as they get promoted into ever-better brains. The senior professors only get equalized every five years or so. I was once the trophy of a bigwig organic chemist, who seemed to have pulled strings with Equalization to pick me for himself, and kept me for what seemed like forever."

"What was he like?"

"Old. Brilliant. Egotistical. I think he chose me simply because he had the power to do it. He was as arrogant as a senior equalizer."

"I'm afraid I've not known many of those."

"Count your blessings. This guy loved to be seen with them, which meant that I was with them, too. They laughed at him behind his back, but he never figured it out. You're more like the younger researchers, only better."

"How's that?"

"Intense. Interested in the mind, as well as the body. You'd think that after being equalized a few times, most guys wouldn't be so hung up on bodies, but they are. And you're sweet." Again the smile. "Strange, but sweet."

She picked up the discarded nail file. "So, what got you up so early? Am I in for a whole year of this?"

"Nothing much," I replied. I'd dimmed the screen so quickly when she'd first approached that I doubted she'd seen anything more than columns of meaningless numbers. "Just checking into race strategies."

She shot me a look with none of her usual humor, and I wondered how much she suspected I was holding back. "Are you always this nervous before a race?"

"No, but this one's different." I groped for an explanation that was true, but not too revealing. After all that she'd shared with me, I longed to reciprocate, but the risks were just too high. Still, I'd be damned if I'd tell her an out-and-out lie. "It's just so unpredictable, what with the new body and all."

I was saved from further questioning by a chime from the terminal. "Incoming call," announced the computer.

"I'll take it." The viewscreen came back to life, revealing yesterday's equalizer.

Time froze. *Caught!* my mind screamed. *Run! Hide!* Panic must have etched my face, and I could sense my consort's sharp gaze, even as the finger-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

nail file continued its hypnotic zip-zip-zip. But the equalizer seemed as ineffectual as ever. Was it an act, I wondered, or did Equalization select these low-level employees to be as non-threatening as first equalizers were intimidating? Surely, if I was about to be placed under house arrest, I'd be hearing from someone higher ranking. This man was little more than a technician.

"Ah, glad to reach you, Andru," he said, as though nothing were amiss. "At this hour, I figured I'd just be leaving a message, but you athletes are an early morning lot, aren't you? I just wanted to tell you that I'd forgotten to give you the 'warranty' on your body. I'm zipping you a copy—" as he spoke, an icon began blinking in the corner of my screen "—but you'll want the thumbscanned hard copy as well, so I'll pop that in the mail, first thing on Monday."

I realized I'd been holding my breath, and I let it out in a slow, gentle sigh, as naturally as possible. My heart was still beating like a triphammer, and it seemed to me that nobody could overlook the rapid twitching of my carotid. Maybe the video connection on the equalizer's end was lousy. More likely, he really was as socially inept as he appeared. I probably could have stood on my head and started chanting in Swahili (if I could remember any from my stint in Kenya) and he would have thought it was just one of the things "you athletes" do on the morning of a race.

His voice droned on. ". . . You'll be happy to know that you're a healthy thirty-four-year-old in prime condition. Make sure you look over the report and thumb-log the pink copy, as usual. You have the normal ten days—well, only nine days now; sorry about that—to note any overlooked defects. Otherwise you're responsible to return the body in its present condition, minus normal wear-and-tear, whatever that means for distance runners, eh? Just between you and me, I've seen Equalization pass off on all kinds of orthopedic problems as 'normal.' What they don't like are massive changes in body weight, cholesterol, blood pressure, liver enzymes, or other things that indicate you've been abusing the body with food, drink, or chemicals. And they're always harping at folks like me for not getting enough exercise—as if that's going to be a problem for you . . ."

I tuned him out, and eventually he ran down like an old-fashioned wind-up toy. The "warranty" was slang for the pre-equalization medical report. I couldn't believe I'd walked out the door without it—that was just another sign of how rattled I'd been. Not only is there the risk of being held responsible for someone else's abuses of the body, but you really need to know its medical history in order to plan your training.

"Thanks," I said, when he finally paused. "I'll look forward to getting it. I've got to go now. I have a race coming up."

"Oh, sure," he said. "Glad to be of service." I hit the disconnect and his face froze, blinked, and vanished.

My consort had ceased all pretense with the nail file. "So you forgot the warranty in your hurry to get to a track so you could be late for dinner . . ." The obvious questions hung in the air, but she chose not to voice them. No reproof, no judgment, nothing.

I have no idea what I would have said if the silence hadn't been broken by the chime of another incoming call.

My body seemed to have an inexhaustible supply of adrenaline. A thrill of purest fear threatened to loosen my bowels, and my heart jolted from semi-rest right back to 180 or so beats per minute. The old man was right about one thing. Whatever I did would have to be today. I couldn't take much more of this.

There was nothing to be gained by ignoring the call, though, so I called the screen back to life, with a ten-second delay while I fought for composure. I sensed motion beside me, then, beneath

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the desk, a hand stole into my lap and came to rest lightly atop the back of my own—which was pressed tensely against my thigh, as though massaging the muscles preparatory to flight. Again, the communication was wordless, but this time it added a new thrill, one that mixed oddly with the still-rising adrenaline.

Then the screen flicked on, revealing a deeply tanned young man with blond hair and startlingly blue eyes. I didn't recognize the body, but that, of course, meant little.

"Sorry to bother you on the morning of a race," he apologized. "I had a rough equalization and wasn't able to call last night. My name is Aaron, and I'm your new coach."

The heady stew of fear, adrenaline, and a woman's touch metamorphosed into relief that left me nowhere to flee, and no reason to fight. "Glad to meet you," I burbled. I could feel the urge to chatter rise within, as my body sought to burn off the now-useless adrenaline. "But pardon me . . ." I hesitated, realizing that what I was about to say might be viewed as tactlessly anti-egalitarian. The babble reflex, though, was far stronger than my sense of propriety. "Your name," I said. "It's rather unusual. Is it Ethnic Revivalist?"

Luckily, Aaron wasn't the type to be easily offended. "Sort of. It's Jewish. I know my bodies no longer look Jewish, but I was raised in a Jewish crèche. At First Equalization, I elected to become a Liberal. There aren't many of us, and since we don't insist on kosher bodies, we don't attract much attention."

"But you kept your name."

"Sure. I was used to it. And all this Revivalist and Anti-Revivalist nonsense is just trash. All names have ethnic roots. Take yours, for example. It's a phonetic form of A-N-D-R-E-W, which is common in the Christian crèches."

The adrenaline was fading, curiosity taking its place. "I didn't know that," I said. "That shows how much I know about religion." *Or how much I've cared.* All I really knew was that the larger groups could form their own crèches and limit equalization to their own members. For the smaller religions, that usually meant death by dispersal, while for the others it usually led to social inbreeding. *No wonder I know so little about them,* I thought. *Even if they had something important to say, I'd never hear it.*

Aaron was still speaking. ". . . called to tell you to take it easy today. The fans don't expect much. Just stay calm, try to find out what you've got, and don't get hurt. Any questions?" I shook my head. "Okay, there'll be a taxi for you at the Granville Street entrance to your building at 10 A.M." He noticed my consort, who had quietly slid her chair into camera range as she continued surreptitiously resting her hand on mine. "Should I reserve an extra seat?"

She wasn't about to give me a chance to say no. "I wouldn't miss this for the world," she said brightly. Giving my hand a final squeeze, she leaned closer and brushed my ear with her lips. "Sweet, but *very* strange," she whispered, and as she drew back, the smile reflected in the screen touched both sides of her mouth equally.

Aaron chose to ignore this little exchange. "Can do," he said blandly, the perfect Equalized Man. "I'll see you after the race. Good luck."

"Thanks," I said, and switched off. *25:48,* I thought. *I've never broken 28:00, and I've never known anyone to go under 27:30. In the Shakedown, it's got to be impossible.*

Ten hours later, I was doing warm-up strides in the Seattle Coliseum—brief, 50-meter bursts, designed to keep me from stiffening up in the moments before the race. Fortunately, the 10,000-meter event is the last on the agenda, so I'd not had to travel yesterday. Even more fortunately, the bullet train takes only ninety minutes to get from Vancou-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ver to Seattle, making the journey little worse than a cross-town commute. Some of my competitors would have flown through the night, mixing equalization with jet lag. The whole thing's not very egalitarian, but it's part of the comedy of errors that makes these Shakedown meets such a popular kick-off to the new season. And popular they are. Nearly 200,000 people jammed the stadium, and the Info-Net cameras bore silent testimony to the millions more, watching from homes and pubs.

As I slowed to a walk, a familiar voice and a gray beard caught my attention. The old man had gotten a front-row seat within 50 meters of the starting line, and was enthusiastically exhorting any runner who came near, playing the role of the die-hard fan. To an outsider, the words he shouted in my direction would have sounded much like those he was aiming at everyone else. "You can do it!" he called. "We know you can!"

I paused, then strode angrily to the crowd barrier in front of his seat. "Who *are* you?" I demanded.

He glanced apprehensively at his neighbors, then shrugged. "It'll all come out in a few minutes, anyway," he said. "But let's be at least a little discreet." He slid from his seat and sidestepped to the nearest aisle, as I shadowed him along my side of the rail. "There," he said, when he'd found a spot suitably removed from other ears. "That's better." He rested his hands on the rail in an attempt at casualness, but they fluttered like wounded butterflies. He dropped them to his sides, then stuffed them in his pockets. "It's hard to know where to begin," he said, "especially after so many years of being careful not to say anything at all." He pulled his hands back out of his pockets and lowered his gaze to them, as though wondering how they'd suddenly reappeared. I stole a glance at my watch to see how long I had before the race start, and when I looked back up, he was finally giving me his full attention.

"Five minutes," I prompted, and he nodded, took a deep breath, and at last launched into his tale.

"I'm part of a small group of friends," he said. Now that he'd started, the words came rapidly, like floodwaters through a decaying dam. "We don't have a formal organization, and if we did, I wouldn't tell you its name. We've been watching you since you were twelve. I've never seen a better natural athlete. If anyone can do it, you can." He chuckled. "And you thought I was going to send you to premed."

At first, that didn't make any sense. Then, understanding struck: the old man was my childhood equalizer!

He smiled as he watched the revelation creep across my face. "I see you've got it figured out."

"But why? Why you, an equalizer, of all people?"

"Perhaps because I *am* an equalizer." He leaned forward, lowering his voice so that I could barely hear it, although the words came even more quickly and intensely than before. "Every day, all I see is waste. It may have begun with the goal of helping the under-talented, but Equalization destroyed the individual. And it gave us the most class-conscious society that history has ever seen. We're all 'equal,' but within that framework we worry about whether we're Class 4 or Class 5 or Class 6. Look at all the perks you and your friends have that the man or woman on the street can never touch. And those are nothing compared to what I've seen in Equalization."

"I've noticed some of that myself. But why me, and why the race?"

"Simple. No matter how well Equalization does its job, there are always individual differences. And people being people always want to be better than their neighbors. In an equalized trade, the variations are so small they make no difference. If you go to a Class 3 dentist, you're going to get Class 3 dental work, no matter what dentist you choose. In racing, equalization has the opposite ef-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

fect. It magnifies those small differences into the distinction between winning and losing. That allows non-athletes to believe that their own tiny distinctions can make them slightly better than everyone else. As long as no one athlete is *too* good, Equalization sees sports as an important safety valve. The Shakedown, though, serves an additional purpose. This early in the season, it's easy to do spectacularly badly but hard to excel—a subliminal reminder of how equalization has minimized the risk of random failure in everyday life."

I nodded. "I was thinking how lucky I'd been to live close by."

The old man snorted. "Believe me, luck had nothing to do with it. Anyway, the Shakedown was perfect for our purposes because an unexpected performance will be an even bigger surprise. As for you, you've long been our obvious choice. Ever since I first encountered you, I knew you had the heart of an individualist and the potential to be a great runner. And now, this is your day." The old man waved at the track. "Go out there, Andru. Give the fans something they won't forget. Go, and run like the wind!"

If he expected me to take those words as dismissal, he was mistaken, even though time was indeed getting short. Every time the old man opened his mouth, he raised more questions, each as disturbing as the one before. Why hadn't someone talked to me long ago? I might have destroyed the whole plan by volunteering for re-equalization. Had they been testing me to see if I'd keep the body? Or had they known the answer all along?

Perhaps because he himself had been one of the indoctrinators, the old man misread my confusion as a residue of my childhood schooling. "Do you need an example of the type of waste I'm talking about?" he asked. "Maybe you haven't noticed how bright your consort is. In another world, she'd have been a standout. In this one, she doesn't fit any of the standard slots. Being a consort was the best option available to her."

I felt as though I'd been punched in the gut. "You mean she's part of this?" I remembered her lips brushing my ear, the thrill of her whispered reassurance. Had that been scripted—calculated to help bring me to this moment?

He laughed. "Heavens, no. We're not into taking *that* kind of risk. Some of my compatriots didn't even want to tell *you* what this was about, but I thought you might need a nudge. No, when the computer picked her as a potential partner for you, we studied her bio, then tweaked the system a bit to make sure she was indeed assigned to you. You seemed to have some interesting things in common, though I wondered if you'd have time to spot them."

Suddenly I was furious. "You *used* me!" I shouted. "And her! You're no better than they are! In fact, you're worse! All you wanted was someone you could manipulate into running your race for you."

Without giving him a chance to respond, I stormed off, wishing there was something I could kick. I actually started to take a swipe at the retaining wall that held the railing, but it was brick, and I didn't want to damage a toe. I felt betrayed. The old man might talk of individualism, but to him I was just a cog in a different kind of machine. Well, no longer. I'd do as Aaron suggested and take it easy today, and if Equalization still caught me . . . well, so far I hadn't actually *done* anything anti-egalitarian with the body. That might count at least a bit in my favor.

I was still angry when the race officials began calling runners to the starting line, but I forced myself to calm down. As I lined up for the start, I looked over the other runners. A few bodies I recognized; many I didn't. As a group, they represented almost the entire cadre of North American professionals. *And today,* I thought, *today I could beat them all.* It was an enticing idea,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

but I pushed it aside. *Not any more.*

My starting position was in the back row, toward the outside of the track. I've always liked starting from there because that way I don't get trampled when everyone sprints for the lead at the first turn. And on a good day, I have the exhilaration of overtaking the others one at a time. I'd never before realized how anti-egalitarian that strategy is. I wondered if the old man noticed.

A starting-line official interrupted my thoughts. "There will be three commands," she said, her voice booming through the stadium loudspeakers. "'Take your marks,' 'Set,' and then the gun. Is that clear?" There were a few murmured assents, but mostly nervous silence. The starting ritual was traditional. I looked again at the other runners, then took a deep breath to settle a suddenly queasy stomach. I could still do it. Not for the old man's conspiracy, but for myself—simply for the sake of doing something better than anyone had ever done it before.

"In that case," the starter continued, "Runners, take your marks!" Forty bodies tensed. *This is it.* My heart pounded in my ears. Suddenly, only the race mattered. I knew I'd made my decision and that this time it was truly my own. I would give the race everything I had.

"Set." The starter raised her pistol. BANG! Everyone surged, in a mad sprint to reach the inside lane by the first turn. Fighting for self-discipline, I settled for eighth place. Ten thousand meters is a long race, and it wouldn't do to spend too much effort on the first laps. *You've got to find the pace and stick with it,* I told myself.

Nevertheless, I was steadily gaining on the nearest runner. In an analytical corner of my mind, I found myself studying his running form. *He's overstriding,* I thought. *He's wasting a lot of energy.*

By the backstretch, I was in sixth place and closing on the leaders. *It's going to get lonely soon if I hold this pace. I'm really going to have to watch my split times.*

At the end of the first lap, I was fourth. "Sixty-seven seconds," someone intoned as I went by. A big digital clock flashed 1:07.

I was horrified. I was already five seconds too slow. And while I was running smoothly, it was hard to imagine holding my present pace—let alone a faster one—for another twenty-four laps. *Give it up,* I rationalized. *Winning the race is good enough. Or take Aaron's advice and back off. Who cares about the record anyway? Save that for some other day.* But there might never be another day.

Concentrating on running efficiently, I added more power to my stride and strove for the lead. *One goal at a time,* I reminded myself as I passed one, and then another runner. The leader sensed me behind him, and picked up his pace, holding onto a two-meter lead. *Good. Now I'll have someone to chase.*

My second split time was 2:11. Better, but still off the mark; I needed to be running slightly faster than 62 seconds per lap. I pushed harder.

By the end of lap number three, the leader was fading. As I passed him, the crowd roared and my mind failed to register the time. I wasn't sure whether the cheer was for me or for something on the infield, where the high-jump finals were in process. A track meet is like a three-ring circus, with several events always under way at the same time. *Hold onto the pace,* I told myself. *It doesn't matter what's going on elsewhere. You can't do any better. This has to be good enough.*

It was, barely. At lap four, I was finally on pace, having run the last two laps in 2:04. But I'd done nothing to make up what I'd lost earlier. And I was already beginning to hurt.

In the sixth lap, I was buoyed up by lapping three stragglers. Two were merely being cautious. The third made me wince in sympathy. His body was that of a gangling youth and the owner

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

was clearly unused to his new leg length, repeatedly stumbling when his feet hit the track earlier than expected. I would have liked to say something reassuring, but I could think of nothing appropriate. Besides, I needed my breath for other purposes.

By the end of eleven laps, I had lapped the entire field. As I passed the starting line, I saw momentary confusion on the faces of the race officials, and realized that they couldn't decide whether I was on my tenth or eleventh circuit. "Eleven!" I tried to shout, but all I could muster was a gasp.

On the next lap, the officials had it right, but two laps later, I was beginning to get confused. The race seemed interminable, and every step was an effort. I had never before hurt so badly so early. I knew I'd lost several more seconds, but even when I finally figured out how many laps I'd run, I was unable to calculate my pace.

Concentrate, I told myself. *Races are won or lost on the ability to concentrate.* I studied my running form. *Big toe,* I thought, in a litany I always use when my form is starting to fall apart. *Get a good toe-off, that's the key.*

By lap twenty-one, I was over 800 meters ahead of my nearest competitor, but still ten seconds off pace. I knew I'd have to make a move soon, or I'd never make up all that time. But I couldn't push yet, or I'd falter before the finish. The spectators were deathly silent. *They're waiting for me to give out,* I thought.

Picture a runner ten seconds ahead, I told myself, using a trick I'd learned as a child. *That's 70 meters. Now, catch him.*

With two laps to go, I'd gained two seconds. *Not enough.* Eight hundred meters was a long way for a final kick, but I couldn't wait any longer. The crowd was still unnaturally silent. The tension was so thick it was almost stifling.

At the start of my last lap, I was five seconds behind. My breath was coming in wheezing gasps. My running form was degenerating. *I'll never make it,* I thought with despair.

Then suddenly, the crowd was with me. Two hundred thousand voices were urging me to the finish, and while they almost certainly didn't know my goal, I couldn't fail them. I felt a surge of energy such as I'd never experienced before, and I pumped my way madly through that last lap. By the time the finish was in sight, my legs felt like rubber, my lungs were on fire, and my running form was shot. But the will and the voice of the crowd carried me on. In a strangely detached state of mind, I watched myself struggle through the last 100 meters and collapse into the arms of someone at the sidelines.

That someone proved to be Aaron. I managed to nod my appreciation, but it was a full minute before I could get enough breath to ask the question that was so important. "Aaron," I gasped, "my time—I didn't see—what was it?"

"I don't know," he said. "I was watching you, not the clock. I've never seen anyone run like that." His blue eyes were shining. "It was magnificent!"

My consort had also materialized nearby, but her expression was more guarded. "So that's what it was all about," she said in her favorite reveal-nothing monotone.

I dragged my attention from Aaron and the overlooked clock. I wanted to lead her aside and speak to her alone and at length, to apologize for not taking her into my confidence, to make her understand why I was only beginning to realize how different she was from the run-of-the-mill consort—that it takes time to see people as individuals, because first you have to pierce the expectations created by their carefully equalized masks.

Maybe I could do that later. At the moment, I had to answer directly. "No," I said, "Only the nerves and the secretiveness were about this. The rest, that was

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

me trying to figure out what all of 'this' had to do with everything else." I lowered my voice and ushered her to a relatively private space on the crowded track. "For what it's worth, I realized last night that no matter what happened, I didn't want to go back to living the old way, when nobody would ever have called me strange—or sweet." I paused. There was no good way to say what had to come next. I started to reach for her hand, then pulled back. Having been manipulated myself, I wouldn't use the language of touch to do the same to her. I forced my voice to be as matter-of-fact as possible. "If you decide you want to get out of here before you get tainted with all this, I'll understand. I'm sure Equalization would love to talk to you, and I doubt they'd label you as a spy."

She didn't speak for several seconds, an eternity that dragged by even more slowly than the worst parts of the race. Her posture now carried a hint of the hesitation I'd seen the night before, although it was mixed with something else that flashed warningly beneath the surface. But when she spoke, the charm-school gloss was firmly in control. "Is that what you want?"

I shook my head. I had a feeling that, given half a chance, she could be fascinating in a way I'd never before allowed anyone to be. "No. But I'm not sure what kind of life it would be—only that I want something more than a bedpartner and a maid. Whatever that is, we'd be teaching each other." I paused, watching the stiffness drain from her posture. "Being around me, though, is probably dangerous."

She gave me just the barest hint of the crooked grin. "I already figured that. But it certainly isn't dull." She slipped her hand into the crook of my arm and moved to my side, in the process dragging me a couple of steps farther away from Aaron, who in the overall bedlam was already safely out of earshot. "Now it's my turn," she said. I watched her shift mental gears, like a runner stepping to the starting line, trying to block out everything but the race ahead.

In racing, we call that getting into "the zone." She either found it, or gave up and plunged ahead, anyway. "Last night, with all the personal questions?"

I nodded.

"I wasn't completely honest." Her arm tensed, and her eyes drifted to the flash of color and motion that marked the still-incomplete high-jump finals. "It's true that the people who sponsored my crèche didn't believe in names—especially not ones that would follow you from one equalization to the next. A lot of us—even the boys—become consorts, and it's easier if you can jettison as much of your identity as possible with each new assignment. Not that I did all that good a job, last night. But there was never a formal rule against names." Her eyes gleamed, and briefly, a tear threatened to spill. Then, she drew a deep breath and, finally, looked back in my direction. "Call me Amy," she said. "When I was twelve, some of the girls picked secret names, and that was the one I would have wanted. I never told anyone, even then. The real Amy was a music teacher. She was too good for her equalization level, but we all ignored that because . . . well, because she taught a lot more than music. Anyway, it's a good name to live up to." The tear finally spilled, and she released my arm long enough to swipe at it viciously, smearing her makeup even more badly than if she'd left it alone.

"A very good name," I said, and again was rewarded with the smile. She returned her arm to the crook of mine, squeezed lightly, and was about to speak when a scuffle in the infield attracted our attention. Three people, one of them an old man with a beard, were struggling with one of the officials. As I watched, the old man ripped the microphone from around the official's neck and turned to face the nearest section of the stands.

"Ladies and gentlemen," he an-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

nounced, his vastly amplified voice overpowering the crowd's babble. "Ladies and gentlemen!" The crowd quieted. "Our winner, Andru, posted a finishing time of 25 minutes and 51 seconds."

Fingers of ice tickled through my bowels. Amy felt me tense, and shot me a questioning look, but I couldn't find the words to tell her that as fast as I'd been, I'd needed three more seconds. The mark had been within my grasp and I'd thrown it away in those sluggish first laps.

But the old man wasn't finished. "That's more than a minute faster than anyone has run this distance in more than 200 years," he shouted. "Today, Andru nearly set an all-time record. Andru—" His voice died as someone cut the power, but it was too late. The stadium had erupted into pandemonium. Fans were spilling out of the stands onto the field. Everyone was shouting. Slowly, I grasped the fact that the record had always been an artificial goal. What really mattered was that I'd run the race of my life. Gradually, the uproar took on form. It became a chant. "An-dru! An-dru! An-dru!" the crowd repeated over and over, a wave of adulation that bathed me again and again and again.

Somehow, the old man forced his way to my side. "Take a bow, Andru. You're the first real hero the world has seen in a long time." He chuckled. "I'm glad you're still on our side. For a moment back there, I thought we'd lost you."

I looked at him coolly, trying to see the fanatic behind the gentle exterior. "I'm *not* on your side," I said eventually. "You'd use me or anyone else if it suited your purpose. I may agree with your goals, but not with you."

"But we *made* you what you are." His voice was pleading, and suddenly I realized that he too must feel betrayed.

"No, you merely allowed me to be what I should have been all along." My anger was fading. All I could see was my childhood equalizer, quietly reproving me for sins he shared. "You made a mistake," I told him, "but you didn't make it today. You should have trusted me a long time ago."

He shrugged. "Perhaps. But what do we do now?"

It was a good question. A part of me still wanted to tell him that all I wanted was to be left alone. As I considered my answer, my attention was caught by a small boy staring wide-eyed at me from the edge of the track. He was young, probably only eight or ten, far below the age of equalization—on a field trip, I presumed, from a nearby crèche. For a full ten seconds, I held his gaze, until an eddy in the crowd blocked him from view. When I turned back to the old man, I knew I had no choice but to forgive.

"We move ahead," I said. "We're committed now. But what do you think Equalization will do?"

The old man had to raise his voice to be heard over the fans, who were pressing ever closer. "For the moment, we don't have to worry about Equalization. It won't retaliate today—it couldn't stand the backlash."

I nodded my agreement. "So let's go celebrate. Then we can plan our next race and decide what to do after that. But this time we do it together." I glanced at Aaron, then at Amy, who'd shifted her grip from my elbow back to my hand, where returning her gentle pressure felt very natural. "All four of us."

The old man nodded. "Sounds good. Until now, I never really let myself believe we'd get this far, but I *have* worked out some ideas— "

The old man's plan proved to be simple. "Just keep racing," he said, "and refuse to be equalized next year. I think the fans will support you rather than see their hero returned to mediocrity, and once you've set such a precedent—"

He wasn't quite right. Since that day, I've studied what the world does to its heroes, and all too often the pattern has

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

been the same. People forget. They expect miracles each time they see you, then disregard them the next day. But Equalization never forgets. It bides its time, knowing it could never put you on trial, but knowing that a trial isn't necessary.

In my case, it was simple. Two weeks after the Shakedown, I set my record in another race. A month after that, I broke it again. Then six months later, following a dramatic string of other wins, I sprained my bad ankle in a collision with another runner. I'll never know if it was deliberate, although I have my suspicions—my repeated victories hadn't made me popular among my one-time peers. But the motive didn't matter—in the next few months, I only ran two races and didn't do well in either. By the end of the year, there was no outcry when I was equalized along with everyone else.

I'm not sure where they found my present body. The previous owner must have suffered a stroke, a terrible accident, or both. Whatever happened, Equalization seized the opportunity to rescue his mind while imprisoning mine. I'm paralyzed in both legs, and can only control one arm. I can't speak intelligibly—even the info terminals can't understand me.

But I can type, sort of. And though it took me a while, I've learned how to hook directly into the Net. That's how I'm writing this—at nights, when no one else is awake, typing one-handed on the terminal by my bed. It's slow, and it's hard to reach the keyboard, but at least I can see the screen. And whatever else I've got, I have lots of time.

Don't mourn for me. Even if I never leave this bed, I won't regret those twenty-five minutes—they are one thing Equalization can't take away. I only wish I knew what happened to Aaron, Amy, the old man, and his fellow conspirators. The old man and his friends knew the risks, and Aaron joined us willingly. But Amy . . . oh, Amy, our year together wasn't enough—no amount of time would have been.

At least we all knew that someday Equalization *will* be defeated. I saw it in the eyes of a young boy. Another hero will come along. Watch for him, O reader, when he arises. Cheer him to victory and don't forget him when he needs you. Who knows—that hero might even be you. After all, if you're reading this, you've found one of my secret links, hidden away among the world records. Simply by browsing this backwater of the Net, you've already demonstrated that you're almost as anti-egalitarian as I am. So, when your chance comes to do something great, seize it while you can. It's better to be truly alive for a single year than to be benignly equalized forever.

I take comfort in knowing that Amy, wherever she is, would agree. ■

VISIT OUR WEBSITE
www.analogsf.com

Don't miss out on our lively forum, stimulating chats, controversial and informative articles, and classic stories.

Log on today!

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SCIENCE FACT

Bad Science, Bad Communication: The Battle Over Bt

Tressa Whalen

The road from research to understanding and application is neither straight nor smooth.

It's not surprising to find Iowa at the center of a brouhaha over corn. After all, Iowa, part of America's heartland, is first in harvested corn, grain, pork and soybean production. Not surprisingly, it is first in genetically engineered corn as well; and therein lies a story of profit, loss, the future of the environment, the fate of the monarch butterfly, and the media's use of bad science.

The state boasts more than 97,000 farms (IDED, 2001), most of which provide a modest income for the typical owner, who makes $15,000 a year on average. Yet one Iowa farm family grows enough food and fiber annually to feed 279 people, one-fourth of whom live overseas (IDED, 2001). Getting a competitive edge can influence the delicate balance between profit and loss. In recent years, Iowa farmers have started growing a genetically altered crop called Bt corn to improve their profit margins by cheaply battling insect damage and increasing crop yield.

France first used Bt as a commercial insecticide in 1938 (Winston, 1997). The United States followed in the 1950s. In 1996, however, a controversy took root when scientists created a new breed of corn with Bt insecticide essentially built in.

The story of genetically modified corn explores the controversy from two perspectives—science and news. The science of genetically engineered (or genetically modified [GM]) agriculture presents its own set of issues and arguments, even among researchers themselves. When the debate spills into the public arena, it becomes hot news, bordering on sensational.

The Science Behind the Story

Bt corn is genetically altered to contain a gene from *Bacillus thuringiensis*, a bacterium naturally found in many soils, plant leaves, and stored grain. Bt produces protein toxins that are deadly to some insects, including the nasty European corn borer (*Ostrinia nubilalis*) (Ostlie et al., 1997).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The European corn borer is a killer. The insect's larvae cause significant damage to crops each year. Researchers at the University of Minnesota estimate losses and damage control costs due to the European corn borer to exceed one billion dollars per year (Ostlie, 1997). One corn borer can reduce a single plant's yield by 3-5% (Tenuta, 1999). The insect goes through two generations a season, damaging the corn in various locations of the plant through each stage. In the insect's advanced stage, the risk of stalk rot and other diseases increases (Mason, et al., 1996).

Bt corn, however, bites back. In about 30 hours, the toxic proteins found in Bt corn bind to key sites in the insect's digestive tract, causing its protective gut-wall layer to tear, enabling pathogens (normally found within the gut) to leak into the insect's body, killing it (Ostlie, et al., 1997).

Bt corn simplifies a farmer's life by eliminating the need for topical pesticides, thus minimizing environmental contamination. In general, genetically modified foods have the potential to aid world hunger-relief efforts because of their ability to be mass-produced in Third World countries where pesticides not only would be detrimental to the population, but often are inaccessible.

GM crops can also be modified to include vitamins and nutrients essential to human health. GM rice contains genes that code for kernel production with beta-carotene, a compound converted into vitamin A in humans. Vitamin A (retinol) deficiency is one of the leading causes of blindness, maternal deaths, immune system deficiency, diarrhea (which kills 2.2 million children a year), and measles (which kills one million children a year) (UNICEF, 1998).

Genetic Engineering Isn't New Science

Farmers have been altering the genetic makeup of the crops they grow for hundreds, perhaps thousands, of years (Byrne, 1999). It has long been their goal to create a crop that grows faster, larger, and better.

Since 1865, when geneticist Gregor Johann Mendel presented his principles of heredity (King and Stansfield, 1997), scientists have sought and discovered easier, more effective ways to improve crop yield and productivity. Mendel's later experiments (though sometimes not intentional) brought forth the idea of cross-pollination, which is the science of breeding two different varieties or species to achieve a desired effect (such as specialized dog breeds). Herein lies the difference between cross-pollination and genetically modified food: In cross-pollination, plants acquire genes through an exchange of pollen to the pistil of another plant; in genetically modified food, humans insert the genes.

Some genetic changes do occur naturally. As the authors of *Transgenic Crops* explain, "In reality all crops have been genetically modified from their original wild state by domestication, selection, and controlled breeding over long periods of time" (Byrne et al., 1999). Cross-pollination is the reason most farmed plant species look and taste different from their wild counterparts.

Over time, scientists gradually merged two areas of plant molecular biology: engineering a plant species to carry and express genes from a variety of other plants, and isolating single genes that code for insecticide proteins (Fischhoff, 1996). Although Bt was first discovered in 1911 in Germany as a pathogen of flour moths and larvae (Bajwa, 2001), it wasn't until the mid-1990s that large-scale commercial use of genetically engineered, or "transgenic," plants became popular in the United States.

In recent years, farmers have grown genetically altered canola, cotton, potatoes, tomatoes, soybeans, and "field" corn, which is used mainly to feed livestock but also appears in corn flakes, taco shells, and corn meal. Agribusinesses continue to aggressively develop new

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

GM crops. All developments must be submitted to the Environmental Protection Agency (EPA) for registration. Varieties of sunflowers, canola oil, coffee, trees, and grass have all been submitted to the EPA for approval (Byrne, 1999).

Federal law also requires approval for food additives whether or not they are the products of biotechnology. The Food and Drug Administration (FDA) views recombinant DNA techniques as food additives only if they are "significantly" different in structure, function, or amount from substances currently found in food (Bessin, 2001).

Genetically modified crops that could ward off disease and insects also hold the promise of cutting down on the environmentally risky use of pesticides. For years, pesticides (a blanket term for any herbicide, insecticide, or fungicide used to kill weeds or insects) have plagued the environmental conscience. Pesticides were commonly used during World War II to meet an increased need for food and reduce casualties and infection caused by mosquitoes and other pests. The chemicals did the job, but not efficiently or safely (Winston, 1997).

Historical evidence suggests only a small percentage of applied pesticides actually reach the targeted pests because of misapplications due to spray drift, air drift, and rainwater runoff. Through groundwater runoff, insecticides contaminate well water, marshes, streams, and rivers. A study by the Natural Resources Defense Council concluded that once pesticides enter the water supply, the risks of cancer and birth defects may increase (Curtis et al, 1993).

Genetic deformities in environmental indicators such as frogs signal water pollution. Birds that feed on affected amphibians get sick and their eggshells lack strength and consistency, so that the shells break during roosting. Scientists contend that this chemical alteration spreads throughout the food chain.

Perhaps the greatest example of pesticides tainting American wildlife lies in the story of the bald eagle, which was near extinction by the 1960s mainly due to Dichlor-Diphenyl-Trichloroethane (DDT) pesticide use. By 1973, DDT was banned in the United States. It wasn't until the early 1990s that the U.S. Fish and Wildlife Service downgraded the bald eagle to "threatened" status in 48 states. DDT bans and other pesticide regulations allowed the species to repopulate.

Although bald eagle populations have stabilized, contamination from other pesticides, such as those used on crops, continues to have serious effects on the environment. Scientists found that one solution for eliminating environmentally toxic insecticides was to engineer a vegetable or fruit the insects wouldn't like. Bt corn was one such method, albeit a controversial one, it turned out.

In August of 2000, researchers Jesse and Obrycki of Iowa State University (ISU), published research that questioned the environmental safety of genetically modified corn (Jesse, 2000). The study—based on earlier research by Cornell University (Losey, 1999)—reported that Bt corn pollen *may* be toxic to butterfly larvae. In layman's terms, the transgenic corn used in the Midwest for years was killing off one of America's best-loved insects—the monarch butterfly. Little mention was made that some insecticides also kill monarchs.

The news went international.

Concerns generated by the reports caused a chain of reactions, few of which shed positive light on Bt corn. Not long after that, what began with monarch butterflies soon became a question of human safety. However, some crucial history about the GM crop was missing from the news reports. Environmentalists were concerned about genetically modified foods in our midst, entomologists and animal activists were scared for the butterflies, and corn users were pulling orders overnight.

Even though Bt corn was not used in

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

human foods, several research reports from the EPA and other scientists seemed to support the safety of Bt corn for humans. In 1998, the EPA had approved Bt corn after feeding rats a Bt toxin produced by *E.coli* (not Bt from corn pollen) and reported that the corn would not affect humans (EPA, 1998).

Although current research shows that Bt corn proteins are not toxic to humans, they may be allergens for some, possibly causing nausea and anaphylactic shock. In September of 2000, a month after the monarch story, the *Washington Post*'s Marc Kaufman wrote a story about how Taco Bell shells were pulled from grocery store shelves (EPA, 2001; Kaufman, 2000) because they contained a strain of Bt protein government scientists say is safe for animal consumption, but not human consumption. The strain isn't digested easily by humans; however, not all varieties of Bt corn contain this protein. After the article, 28 individuals reported they had had allergic reactions to the corn shells. In response, the U.S. Centers for Disease Control and Prevention (CDC), supported by scientists from the USFDA, tested 17 individuals who consented to a blood test for the StarLink corn protein, called CRY9C. The CDC and USFDA reported no trace evidence (antibodies) of StarLink corn proteins in the blood samples (USEPA, 2001).

Bt Sparks a Controversy

If Bt corn was going down, it was with a resounding thud—felt by farmers, industry, government, and the economy. The National Corn Growers Association (NCGA) estimates that farmers grow about 31 million acres of genetically modified plant species such as Bt corn and other herbicide-tolerant varieties; roughly 40% of the U.S.'s farming acreage. In 1999, Bt corn itself accounted for approximately 20 million acres—nearly a quarter of the nation's total corn production (Benbrook, 1999).

Since Bt corn's introduction into the U.S. in the mid-1990s, before the monarch butterfly issue hit the news in 2000, journalists didn't appear interested in human consumption of Bt corn—allergens didn't seem to be sexy enough for the news. In 1999, a year prior, a press release from Cornell University researchers John Losey, Linda S. Rayor, and Maureen E. Carter, whose work sparked the ISU study, stated, "An increasingly popular commercial corn, genetically engineered to produce a bacterial toxin to protect against corn pests, has an unwanted side effect: Its pollen kills monarch butterfly larvae in laboratory tests" (Friedlander, 1999). A Lexis-Nexis search showed that more than 100 newspapers and scientific magazines quoted the press release in the days to follow, but still, there was little or no public outcry for the fate of the monarch or public health.

It wasn't until the August 2000 report by Jesse and Obrycki that journalists took notice. Headlines such as "'Frankenfood' Threatens Butterflies?" (Andrews, 2000) and "Butterfly-Killing Corn: A Bad Dose of Genetically Engineered Corn" (Kinney, 1999) set the tone for subsequent media coverage. Bt proteins are not toxic to humans, hoof stock, household pets, or fish, but monarchs provided some drama. As *USA Today* reported, "Genetically engineered corn can lead to a bountiful harvest, but its pollen kills the caterpillars that turn into beautiful monarch butterflies, a study out today says" (Fackelmann, 1999). Andrews' article called the ISU study, "The first field study to show that America's favorite insect, the monarch butterfly, can die from the pollen of gene-altered corn" (Andrews, 2000). Eventually, newspapers and other media outlets in Australia, Asia, Europe, North and South America, and Canada printed versions of the "monarch vs. Bt corn and genetically modified (GM) foods" story.

Such stories took a large, convoluted topic and attempted to condense it into

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

one newsworthy article. However, the science was prematurely announced, since, to date, there is no conclusive evidence that monarchs in the wild would ever consume harmful amounts of the Bt pollen. The research was also portrayed in a light confusing to those not familiar with scientific procedure and protocol. In addition, the media was fast to report a story that was underdeveloped, and slow to delve deeper into the science.

Counteracting Science and Media

Steven J. Milloy, columnist for FoxNews.com and publisher of JunkScience.com, was one of the first to criticize the media and the ISU study. Media representatives reported strictly what they heard and didn't question the superficial study, missing contradictory science reports. Indeed, the protein is toxic to other moths and butterflies as well, but these are insects that normally do not eat corn pollen. Had reporters questioned why the EPA ever approved Bt corn use, they would have seen that the EPA had concluded monarch larvae would have little exposure to the pollen. In addition, a year earlier, the author of the Cornell study published in *Nature* said in a BBC address, "I don't think it's a scare story, because we're showing that this is only a laboratory study. At this point, I can't see pulling back on the Bt crops because of their proven benefits weighed against potential risks" (Milloy, 2002). He also said in an Associated Press interview, "I still think the proven benefits of Bt corn outweigh the potential risks" (Kinney, 1999).

ISU's research was called a "field study," but they barely left the laboratory. Milloy, after reviewing the research, reported that researchers placed potted milkweed plants, the main food of monarch butterfly larvae, in and around Bt corn test plots. When Bt corn pollen fell on the milkweed leaves, the researchers removed the leaves to a laboratory where leaf sections about the size of a dime were placed in petri dishes. The researchers put a monarch larva on each section. Two days later, the researchers counted how many larvae died (Milloy, 2000 and Jesse, 2000).

Field studies should be based on the scientific method, where a hypothesis is tested using a known principle to find an unknown result, or a cause is found for a known result. In the ISU study, the known principle was that Bt corn kills some insects; the unknown was the extent (if any) of the impact of Bt pollen on monarch butterflies in unknown (or uncontrolled) conditions. These unknowns in the ISU study should have been observed in uncontrolled, natural conditions. Instead, similar to altering the results of an experiment to match the hypothesis, the unknown factor was omitted when the larvae did not have a choice of food. Without being able to move to clean leaf surfaces and without rain to wash the pollen away, the larvae were doomed (Milloy, 2000). Researchers further tainted the "field study" by placing the larvae on the top of the leaves when, in the field, larvae usually hatch on the underside, where pollen is least likely to adhere. Further, after two days of force-feeding toxic pollen to monarchs, only 20% of the larvae died (Jesse, 2000). In addition, ISU scientists used an extremely toxic type of Bt corn pollen called Event 176 (there are approximately 280 known strains, all varying in toxicity levels) that only accounts for about 2% of the Bt corn market (Milloy, 2000). At the time, Novartis Seeds, Inc., the producer of Event 176, was in the process of removing the product from the agriculture industry. Although monarch larvae and other advantageous insects can often withstand much higher doses of toxin within the Bt corn strains, corn borers are effectively killed by lower toxin levels, so farmers usually do not use the extremely toxic strains.

Bt corn and its benefits—or lack thereof—had not and still have not been

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

completely and thoroughly researched, but the public rarely heard about the questionable research. Only recently have there been reconsiderations of the study. The September 15, 2001, issue of *Science News Online* featured a report released by several scientists who published their findings in the *Proceedings of the National Academy of Sciences* of October 1998, stating the impact of Bt corn on monarch butterfly populations was "negligible" (*Science News,* 2001). On Feb. 21, 2002, another panel of agricultural scientists and biologists (convened by the National Academy of Sciences two years ago) finally concluded that the Department of Agriculture had not overlooked any glaring environmental risks in its subsequent reviews of GM plants before approving them for field testing (Revkin, 2002). The panel agreed that the testing protocol needed to be more rigorous and open to public concern.

Agreeing to Disagree

It is clear the controversy over Bt corn won't dry up. New stories on both sides of the issue are published on a daily basis. Each brings more and more ethical food to the table.

One potential drawback to genetically modified foods is the possibility, for instance, of creating Bt-resistant insects. Strictly relying on Bt proteins for insect control increases this probability. However, some scientists feel this can be easily overcome by increasing Bt toxicity levels, engineering for multiple toxins, or expressing Bt protein only in tissues highly sensitive to damage (Kota, et al 1999).

Another issue surrounding Bt corn is the fear behind bioengineering in general. One such opinion is offered by Nathan Batalion of CQS, a software engineering and public service environmental consulting firm in Massachusetts, who said, "'Bioengineering' thus offers a contradiction in terms. 'Bio' refers to life, what is not mechanistically predictable or controllable—and 'engineering' refers to making the blueprints for machines that are predictable—but not alive. With biotechnology, roses are no longer crossed with just roses. They can be mated with pigs, tomatoes with oak trees, fish with asses, butterflies with worms, orchids with snakes. The technology that makes this possible is called biolistics—a gunshot-like violence that pierces the nuclear membrane of cells. This essentially violates the consciousness that forms and guides living nature. Some also compare it to the violent crossing of territorial borders of countries, subduing inhabitants against their will" (Batalion, no date).

Others fear for the animals that genetically modified foods affect. Rebecca Goldburg, senior scientist at Environmental Defense, a New York-based conservation group, said, "No one wants to tell their children what monarch butterflies used to look like. It's time that the EPA insist that the companies selling Bt corn take measures to protect monarchs and other butterflies from toxic pollen from Bt corn" (Environmental Defense, 2000).

Finally, concern for food safety is still heavily debated. In many other countries, GM foods are even banned due to public concern. The Food Ethics Council (2002) said, "Assessments of the safety (human and environmental) of GM foods, though of extreme importance, are not the only important matters. Attention also needs to be paid to ethical concerns, which are often overlooked." The council lists several ethical concerns, including conservation, biodiversity, sustainability, and food labeling.

As the debate over GM foods progresses, the main concern seems to be mandating companies to include food labels on their packaging that alert the consumer to the contents of the product. One concern shown in some studies is the possibility of an allergic reaction to Bt corn. Although some media and special-interest group headlines of-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ten lead the reader to believe otherwise, to date, there is no conclusive evidence of "dangers" other than a lack of efficient testing protocol. Physicians and Scientists for Responsible Application of Science and Technology (PSRAST, 2001) have stated that, "These foods may contain unexpected substances that may be harmful in the worst case. Yet the (genetically engineered) foods on the market have not been tested for safety in an adequate way." Biochemist Dr. Arpad Pusztai contends, "The technology is itself flawed, unpredictable, and potentially dangerous that has created all first generation of GM crops" (Pusztai, 2002).

The controversy over Bt corn and other genetically modified foods will not soon be resolved; however, it demonstrates the need for better understanding and communication between scientists and the media. Ninety-five percent of Americans are scientifically illiterate (Sagan, 1996), meaning roughly 197 million people in the United States do not understand how science works, the process of evidential reasoning, or whose opinions to trust (Schopf, 1999). A National Science Board (NSB) survey of Americans indicated that only 2% of them understood how scientific theories are developed and tested, and only 23% were minimally able to explain the nature of scientific study (NSB, 1996). Now more than ever, as science progress into new frontiers in genetic research, communication, understanding, and trust between journalists and scientists are critical.

"The communicative link between scientists and the public is vitally important to the success of science research as a whole; the public needs accurate, adequate science information for it to be able to make justifiable, informed public policy decisions regarding science and society," said Kristen Kusek, science journalism coordinator at the University of South Florida in St. Petersburg (Kusek, 1998). For Bt corn, the consequences of mismanaged news releases and premature scientific announcements have had far-reaching consequences economically, scientifically, environmentally, and socially. It is little wonder that the scientists involved in the original research of Bt corn have yet to respond to follow-up inquiries. The media are supposed to act as a watchdog for the public, but with Bt corn, they have spent too much time barking at shadows.

In Iowa, a land where snowmobiles and John Deere tractors are legitimate methods of transportation, farmers who have lived hand-to-mouth for the better part of their lives are now dealing with an international controversy. Today's farmer is not equipped to handle media hype, public fear, or industry backlash. At this rate, farmers may need a PR consultant. ■

About the Author: Tressa Whalen is the science writer and editor for a zoological facility in Florida. She holds a biology degree from the University of Northern Iowa and a masters in journalism from the University of South Florida. She is also a scriptwriter and production assistant for several science-based, educational videos.

WORKS CITED AND RECOMMENDED READINGS

Andrews, Wyatt. (2000, Aug. 21). 'Frankenfood' Threatens Butterflies? *CBS Worldwide, Inc.* Ames, Iowa.

Bajwa, Waheed I. and Marcos Kogan. (2001). *Bacillus thuringiensis-Based Biological Control of Insect Pests.* Unpublished Manuscript, Corvallis: Integrated Plant Protection Center (IPPC) Oregon State University.

Batalion, Nathan. *CQS Health and Environment: Health Alert and Toxic Alert.* www.cqs.com

Benbrook, C. (1999, June). *EPA-USDA*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Bt-Corn Resistance Management. Meeting Report at National Corn Growers Association Workshop, Chicago, Illinois.

*Besson, Ric. (2001). *Bt-Corn: What is it and How it Works. University of Kentucky College of Agriculture, U.S. Department of Agriculture.* Revised: October 2001. Retrieved on February 13, 2002 from University of Kentucky, Department of Agriculture website: http://www.uky.edu/Agriculture/Entomology/entfacts/fldcrops/ef130.htm

Bt Corn Risk to Monarchs Is "Negligible." (2001, Sept. 15). *Science News.* 160(11):164.

*Buttler, T., Martinkovic, W., & Nesheim, O.N. (1993). *Factors Influencing Pesticide Movement to Ground Water.* Revised: April, 1998. (Rep. No. AS594) Gainesville: University of Florida, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences.

Byrne, Pat, Sarah Ward, Ann Fenwick and Judy Harrington. (1999). *Transgenic Crops.* Retrieved on May 13, 2001 Colorado State University, Center for Life Sciences and Department of Soil and Crop Sciences website: http://www.colostate.edu/programs/lifesciences/TransgenicCrops/.

Curtis, J., Profeta, T., & Mott, L. (1993, June). *After Silent Spring: The Unsolved Problems of Pesticide Use in the United States.* New York: Natural Resources Defense Council.

Fischhoff, D.A. (1996). *Insect-resistant crop plants. Biotechnology and Integrated Pest Management.* G. J. Persley (ed.). Wallingford, UK: CAB International. Pp. 214-227.

Friedlander, Blaine P. (1999, May 19). *Toxic pollen from widely planted, genetically modified corn can kill monarch butterflies, Cornell study shows.* Press Release, Cornell University.

Environmental Defense. (2000, Aug. 21). *Study: Genetically Engineered Pollen Kills Monarch Butterflies.* Press Release. New York.

*Fackelmann, Kathleen. (1999, May 20). Engineered corn kills butterflies, study says. Retrieved on April 11, 2001 *USA Today* website: http://pqasb.pqarchiver.com/USAToday/

Food Ethics Council. (2002). *Novel Foods; Beyond Neffield: A Food Ethics Council Report.* Retrieved on February 27, 2001 from Food Ethics Council website: http://www.users.globalnet.co.uk/~foodeth/reports.htm

Iowa Department of Economic Development. (2001). Iowa Tourism Office. Retrieved on October 1, 2000 from IDED website: http://www.traveliowa.com/iowa_facts/

Iowa State Governor's Office, Governor's Task Force. (2000, March 6). *Report of the Governor's Task Force on the Agricultural Situation.* Retrieved on October 1, 2000 from The Office of the Governor of Iowa: http://www.state.ia.us/governor/archives/old_2001_agenda/.

Iowa State University. (1999, October 29). *ISU Researchers Find Farmers Reduce Insecticide Use With Bt Corn.* Press Release, College of Agriculture, Iowa State University, Ames.

Jesse, LC & Obrycki, S. (2000). Field deposition of Bt transgenic corn pollen: lethal effects on the monarch butterfly. *Oecologia*, 125 (2), 241-248.

Kaufman, Marc. (2000, Sept. 18). Biotech Critics Cite Unapproved Corn in Taco Shells: Gene-Modified Variety Allowed Only for Animal Feed Because of Allergy Concerns. *Washington Post.*

King, RC & Stansfield, WD. (1997). *A Dictionary of Genetics* (5th ed.). New York: Oxford University Press.

Kinney, David. (1999, May 19). Butterfly-Killing Corn: A Bad Dose of Genetically Engineered Corn. AP Wire, *ABC-News.*

Kota, M., Daniell, H., Varma, S., Garczynski, S.F., Gould, F. & Moar, W.J. (1999). *The Next Generation of Bt Plants? Overexpression of a Novel Bt Protein in Chloroplasts Provides Resistance to Plants Against Insects.* Unpublished manuscript, Auburn University,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

College of Agriculture, Alabama.

Kusek, Kristen. (1998). *Florida Red Tides from a Scientific and Public Information Perspective.* Unpublished Masters Thesis, University of South Florida, St. Petersburg.

Losey, J.E., Rayor, L.S., & Carter, M.E. (1999). Transgenic pollen harms monarch larvae. *Nature,* 399, 214.

Mason, C.E., Rice, M.E., Calvin, D.D., Van Duyn, J.W., Showers, W.B., Hutchison, W.D., Witkowski, J.F., Higgins, R.A., Onstad, D.W., & Dively, G.P. (1996). *European Corn Borer- Ecology and Management.* North Central Regional Extension. Pub. No. 327.

Milloy, Steven J. (2002). *Junk Science.* Retrieved in 2000, 2001, 2002 from Junk Science website: http://www.junkscience.com

National Science Board. (1996). *Science and Engineering Indicators: 1996.* (NSB:96-21). Washington, D. C.: U. S. Government Printing Office.

Ostlie, K. & Hutchinson, W. (1997). *Bt Corn & European Corn Borer Long-Term Success Through Resistance Management.* Ames, IA: Iowa State University Press.

Physicians and Scientists for Responsible Application of Science and Technology. (2001). *Genetically engineered food Safety Problems: An impartial evaluation.* Retrieved on October 12, 2000 from www.psrast.org.

Pusztai, Arpad. (personal email communication, March 6, 2002)

Pusztai, A., Ewen, S.W.B., Grant. G., Peumans, W.J., van Damme, E.J.M., Rubio, L., & Bardocz, S. (1990). Relationship between survival and binding of plant lectins during small intestinal passage and their effectiveness as growth factors. *Digestion,* 46 (2): 308-316.

Sagan, C. (1996). *The Demon-Haunted World: Science as a Candle in the Dark.* New York, NY: Random House.

Revkin, Andrew. (2002, February 22). Panel urges U.S. to Tighten Approval of gene-altered crops. *The New York Times Co.*

Schopf, J.W. (Ed.). (1999). *Evolution! Facts & Fallacies.* San Diego: Academic Press, 4, 71-90.

*Smith, L.S. (2000, Oct. 12). Debate Over Genetically Modified Crops Grows in Durham, N.C., Area. Durham, NC: *The Herald-Sun.*

Tenuta, A. (1999). *A Grower's Handbook: Controlling European Corn Borer with Bt Technology.* Retrieved on May 11, 2000 from Ontario Corn Grower's Assoc. website: http://www.ontariocorn.org/btguide.pdf

Anderson, Janet L. (1999, December 20). Letter to Bt Corn Registrants. United States Department of Environmental Protection Agency, Office of Pesticide Programs.

United States Department of Environmental Protection Agency. (1999, May 29). *EPA and USDA Position Paper on Insect Resistance Management in Bt Crops.* (USDEP Position Paper No. 618). Arlington, Virginia: Office of Pesticide Programs.

United States Department of Environmental Protection Agency. (2001, June 13). *FDA Evaluation of Consumer Complaints Linked to Foods Allegedy Containing Starlink™ Corn.* Food and Drug Administration. Center for Food Safety and Applied Nutrition, Office of Science Coordination and Policy. Retrieved on November 21, 2001 from EPA website: http://www.epa.gov/scipoly/sap/2001/july/fda.pdf.

United Nation's Children Fund (UNICEF). (1998). *State of the World's Children.* Oxford and New York: Oxford University Press.

Winston, Mark L. (1997). *Nature Wars: People vs. Pests.* Cambridge: Harvard University Press. Pg. 1-18.

*Sources for further information, but not quoted in text.

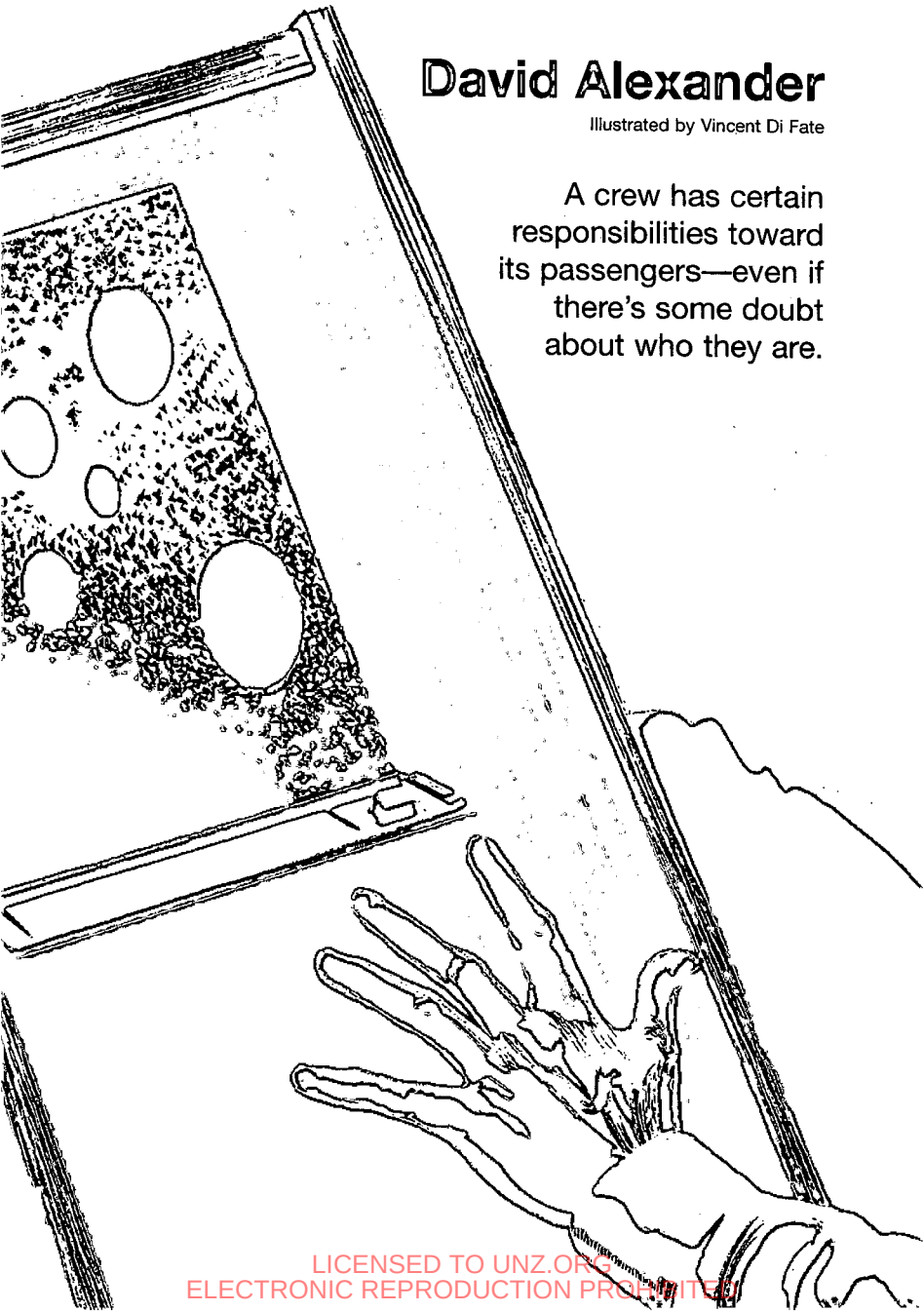
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE HUMAN DRESS

David Alexander

Illustrated by Vincent Di Fate

A crew has certain responsibilities toward its passengers—even if there's some doubt about who they are.



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Ignoring the odor of Cookie's stuffed peppers that had overpowered the mess room's ventilators, I poked a few more times at the fragments on my tray, then got up to grab a last cup of tea before going back on watch. The deck plates vibrated faintly with the dull hum induced by the *Orion*'s engines running only slightly out of phase. When I turned away from the dispenser I noticed Chief Engineer Moahmar Califa sharing a table in the corner with our sole passenger, a spindly academic by the name of Einot Kairee. Moahmar caught my gaze and waved me over.

"Professor, you know our First Officer I think, Harry Dondero." Califa's huge hands gestured up at me. Kairee swiveled his head and blinked twice rapidly as if puzzled by my presence, then gave his chin a slight bob.

"Uhh, certainly, of course, please join us, Mr. Dondero."

Moahmar twisted the table's third seat on its gimbal and, after a half second's hesitation, I sat, placing my chipped white mug in front of me.

"Professor Kairee was just explaining the benefits of manufactured minds," Califa said easily, a glint of suppressed emotion flicking behind his eyes.

"I didn't think that they had ever gotten those things to work."

"The Professor was speaking theoretically." A thin smile creased Califa's lips.

"Is that your specialty, Professor, neural net design?"

"Actually," Kairee said, drawing out the syllables, "my primary training was in psychology with a specialization in emotion stimulus-response mapping. I've come to my interest in manufactured minds quite legitimately as an aspect of the investigation of the role of emotion on thought."

"It's been my experience," Califa said, smiling, "that the more emotion there is in any situation the quicker thought goes out the hatch."

"Is that your point, Professor, that the benefit of manufactured minds is that their judgments aren't clouded by emotion?"

Kairee frowned and gave his head a little shake. "I don't believe that any thinking entity can survive without emotion. My thesis is that the presence of emotion is vital, a *sine qua non*. Without it the organism, any organism, dies." Kairee stared at Califa belligerently for half a breath then lowered his eyes and slouched back in his seat.

"We're still speaking theoretically then, I assume, because as I recall," I said, pausing to take a sip of tea, "most of the manufactured minds self-destructed within a year of being turned on."

"That's one way to put it," Califa snorted. "Most went catatonic, and a few went just plain crazy. Remember the experimental shuttle on the Marsport-Deimos run that they stuck one in? The thing ran fine for about a year—then it kamikazied straight for the *Juno Queen*. If the meteor deflector hadn't made a lucky hit on the shuttle's thruster control it would have turned the *Queen* into a floating pile of scrap. And what did the manufacturer have to say about it? 'Equipment malfunction of undetermined origin.' Hah! It'll be over my cold, dead body before they ever put one of those zombies to work on any ship of mine."

"What about you, Professor? Do you think they'll ever build a manufactured mind that'll be reliable?"

Kairee twisted his head on his thin neck and paused for a moment, apparently fascinated by the ventilator grill in the wall above Califa's head.

"Reliable? Hmmm. No . . . useful. Beneficial, yes, but reliable? No, by definition, I think, that's not the right word to apply to a sentient being."

"You see, that's what I'm talking about!" Califa said hotly.

"What—?"

"—Sentient being! That's how it starts! It's not a machine, it's a person. The next thing you know, it's got rights. It can sue. It can vote. It can't be turned

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

off. What's the point of spending millions to build the damn machines in the first place if you're going to turn them into 'sentient beings'? I'd like to know. People were still in plentiful supply the last time I looked. We manufacture lots of them the old fashioned way, maybe too many judging by the over-crowded hell-hole earth was the last time I was there. If they're not going to stay machines we can work till they fall apart and then throw them on the junk heap, what's the point of building them in the first place, answer me that."

Kairee's face twisted into an expression I had not expected. Anger, condescension, frustration, I would have understood any of those emotions, but instead Kairee's lip trembled and below his brow I saw sad, fearful eyes like those of a Jew who's just realized he's wandered into a tavern crowded with storm troopers.

"I'm due back on watch," I announced after a second or two's awkward silence.

"Uhhh, Mr. Dondero," Kairee called as I began to turn away, "How long before we reach Beloved?"

"Is that where you're going?"

"No," Kairee said quickly. "I'm booked through to Centralia, eleven days beyond Beloved."

"Eleven days, more or less."

Kairee turned quickly to Califa. "Is there some problem with the engines? Do you expect a delay? We're not going to have to lay over on Beloved, are we?"

"My engines will get you where you want to go, Professor, don't worry about that. The *Orion* may not be the newest ship in space but she's as solid as a duraloy plate."

"I just meant that there's always an element of random events in these things," I said easily, anxious to calm Kairee. "Ordinary things, docking shortages, last minute cargo snafus. We've seen more than one medical quarantine, haven't we Moahmar?" Califa nodded a quick agreement remembering the time we lost an officer to quarantine for a case of the measles. "But," I continued, "I don't have any reason to expect a problem on this run."

"Smooth as glass the last six months or more," Califa agreed quickly and the Professor seemed to regain his composure.

"So, to answer your question, I expect us to dock at the Beloved Orbital Transfer Facility in about seventy hours. Say one day more for cargo turnaround and then we'll be off for Centralia. Do you have a deadline, starting a new job or something?"

Kairee took a quick breath and frowned. "Let's just say that I'll be glad to arrive there safely with my . . . cargo," he said quietly with a pause at the end as if fumbling for the right word.

Puzzled, I hesitated a moment longer then nodded at Califa and headed back to the bridge. As I had told Professor Kairee, things aboard the *Orion* had been going smoothly for months, plenty of cargo, full payment by the shippers, no breakdowns, no surprises. Of course, it couldn't last, not out here in the Rim where tramp freighters like the *Orion* eked out their living between second class planets on the trailing edge of humanity's slow drift toward the end of the arm.

I got the first sign of trouble as soon as we came out of Non-E Space in the form of a repeating radio message: "Warning, to all commercial vessels. A virus has infected the Beloved Orbital Transfer Facility computer system. Do not initiate autodocking procedures. Do not accept any data downloads form the OTF. Engage security firewalls between all ship data receptors and navigational systems. You will be manually directed to the appropriate docking port when you reach 50,000 kilometers from the OTF. . . . Warning, to all commercial . . ."

"What do you suppose that means?" I asked Everson, the navigator who was sharing the A watch.

"Nothing good, not that I ever expect

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

anything good as far as Beloved is concerned."

I didn't need to ask Everson to explain. About ten years earlier a fundamentalist sect seized power and promptly established strict genetic rules for marriages, limitations on the number and gender of children based on eugenic and religious principals, compulsory sterilization of "genetic defectives" and a host of other rules governing almost every aspect of family structure and reproductive options. Still, the government had never tried to extend its regulations to interstellar commerce and had always left the OTF strictly alone. They needed trade and they had been smart enough not to do anything that would scare away ships like the *Orion*.

"Probably some dissident programmer managed to get a bug into their system as a protest against the government," I muttered, answering my own question. "Still, I'd better call the Captain."

Over the next few hours Califa, with some help from Everson, managed to isolate most of the ship's systems from the comm links and after assurances from the OTF controller that the facility was otherwise operating normally, Captain O'Bannion made ready for a manual approach.

"We still have freight to deliver and supplies to take on. I can't just jettison our cargo at the first sign of trouble," O'Bannion said, frowning, talking, I think, more to himself than to me. A few minutes later, while Essabhoy's crew made ready to off-load the cargo consigned to Beloved, the Captain and I took our paperwork, this time on real paper printed on the ship's own equipment instead of an electronic download, to the Station Administrator's office. We had barely laid our licenses and manifest on the counter when a short woman dressed in an expensively cut blue and silver business suit entered the room.

"Captain O'Bannion?" she said, extending her hand. "I'm Taylor Morrel, Station Director. Why don't we step into my office while Mr. Jamal processes your forms." Morrel didn't wait for an answer and the Captain and I had no choice but to follow her. Flat panel displays of late afternoon winds rippling waves of grass on a deserted meadow adorned the walls like windows into another world. "I'm from Xavier," she said, noticing my gaze. "They say that no matter how far we stray we never forget afternoons on the moors just before a storm. I think, just about now . . . yes." Morrel nodded at the panel to my right as a flicker of lightning leapt from the darkening sky. For a moment longer the Director gazed at the image of the unfolding storm, then sighed and turned back to us.

"Well, let me fill you in on the situation here."

The Captain and I glanced at each other, understanding immediately that this was not going to be good news.

"There's been . . . unrest . . . down below—"

"—In Solitude?" the Captain interrupted, naming the capital city on the northern hemisphere.

"Everywhere, actually. There's been a change in the government, more or less completed several days ago. A Provisional Council has replaced the Archon and his Cabinet as the chief executive body. There have been some unfortunate incidents."

"How unfortunate?" O'Bannion asked, a harsh edge to his voice.

"Some of the Executive Deputies have been executed, though most of them were part of the Enforcement Division of the Genetic Health Directorate."

"In other words, the people running the euthanasia squads."

"By and large, yes," Morrel admitted, lowering her eyes briefly. "In any event, that's more or less over but there are arrest warrants out for the Archon and all of his surviving cabinet officers and their deputies."

"The charges?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Mass murder, crimes against humanity." Morrel paused then continued. "They're alleging over a hundred thousand victims. If convicted, the punishment will be death."

"What does all this have to do with us?"

"The Archon, two of his deputies, and a squad of his personal guards happened to be on the station when Solitude came under the control of the new government. I'm sure you can understand that this puts us in a difficult situation. The OTF's policy is to remain strictly neutral in political matters."

"*Happened* to be on the station? Right. How long will it be before the new government sends their own soldiers up here to arrest the Archon?"

"It could happen at any time. Apparently about a year ago the Archon established a base on Charity—it's one of moons of the seventh planet— and staffed it with politically reliable personnel and an interstellar ship. The new Provisional Council was afraid that the Archon was going to make a run for it and—"

"—and they introduced a virus into your systems hoping to keep him bottled up here until they could come and get him," O'Bannion broke in. "So, why haven't they taken him off your hands?"

"Because the virus migrated to their own shuttle fleet too," I answered. "Didn't it?"

"Apparently so. It might be that some remaining supporters of the Archon helped it along. In any event all the shuttles have been affected as well as quite a few of our systems. I expect that given their access to the manufacturer's facilities and trained technicians the new government will have at least some of them back in service very soon, within half a day at most I should think."

"Jesus!" I shouted and grabbed my phone. "Essabhoy," I screamed into the speaker, "close the hatches and have Everson issue arms to the crew. Don't let—"

"—It's too late, Mr. Dondero," Essabhoy's hollow voice replied. "I'm sorry, there was nothing we could do." The phone went dead for a moment, then a new voice come on the line.

"Captain O'Bannion?"

"This is Harry Dondero, the First Officer."

"Would you put Captain O'Bannion on the line, please?" the soft voice asked politely. Wordlessly, I handed over the phone.

"O'Bannion."

"Captain, this is the Archon of Beloved. I'm afraid that events beyond my control have forced me to take passage on your ship for myself and my associates."

"And if I don't want your business?"

"That isn't really an option, I'm afraid. Eight of my group are my personal security staff and for obvious reasons they've been assigned to guard the critical areas of your ship. Let me suggest that you unload whatever cargo you have for Beloved immediately. We'll need to leave for Charity within two hours."

"Impossible, that will take at least—"

"—I'm afraid I must insist. I've already informed your Mr. Essabhoy though I'm sure he's waiting for your authorization. I'll put him on."

"Captain, they had guns—"

"It's not your fault, Esmail. We're apparently leaving in two hours so use every crew member we've got to offload our local cargo. We can't afford the late penalties."

"What about supplies?"

"If you can do both, get them, but most important is the cargo. If we have to we can make it to Centralia with what's on board, but I'm planning on coming back to the OTF when we've taken the Archon where he wants to go. Understood?"

"Yes, Captain."

O'Bannion slapped the phone into my hand almost hard enough to break bones. "You set us up!" he screamed at Taylor Morrel.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"My crew is already at your docking bay," Morrel said calmly, all business. "We'll make sure your cargo gets properly stored and delivered once the shuttles are back in operation."

"You officious bitch! You've hijacked my ship!" O'Bannion took an ominous step forward.

"Captain, if I don't get rid of the Archon right away, I'm going to have a gun battle on my station. He's facing a death sentence and he knows it. He's not going to quietly surrender and the people down below are going to do whatever it takes to keep him from escaping, including having fifty heavily armed soldiers fight their way through this facility and likely as not open at least part of it to space in the process. I'm not going to risk all that just to save having your schedule delayed by a few days. Take the Archon to Charity then come back, take on new cargo and supplies, and be on your way, a delay of three days at most. We'll waive docking and customs fees to compensate you for your trouble."

"This is piracy," the Captain growled in a low, mean voice.

Morrel glanced deliberately at her watch then back at O'Bannion. "You've got an hour and fifty-six minutes until your departure, Captain. I think you can find a better use for your time than to call me names." Morrel's eyes swept past us and focused on her door. Barely restraining ourselves from some senseless act of violence, we turned and headed back to the ship. Two hours later with the last crates barely out of the hold and enough fresh water and fuel on board to top off our tanks we broke the seals and drifted out of Bay 6. Two of the Archon's soldiers stationed themselves on the bridge and kept a tense watch on every move we made.

"The Archon wants to talk to you," the senior guard told the Captain as soon as we had settled on our course for Charity.

"My duty's on the bridge," O'Bannion snarled. "Dondero, you go talk to our 'passenger.'"

One guard remained while the other led me back to the mess where our captors had apparently decided to hold court. It was obvious who the leader was, a tall, slender man with a mustache, brown skin, iron gray hair, brown eyes, and wearing a black tunic with silver buttons and black pants with a narrow silver stripe along the seams. When I approached he stood and extended his hand. I kept both of mine clasped behind my back.

"Harry Dondero, First Officer of the *Orion*."

"Phillepe Gandar, Archon of the Free Planet, Beloved." Gandar's eyes twinkled as if he were party to some secret joke. "Thank you for your hospitality to myself and my associates, Mr. Dondero. Perhaps you will join me for a cup of your excellent coffee." Again I noticed the soft, almost hushed tones in which Gandar expressed himself, working hard to project the image of a civilized, educated man, rather than a barbarian who would murder thousands with the stroke of a pen. Gesturing to the empty chair next to his own he sat leaving me little choice but to do the same.

"I understand that this is inconvenient for you, Mr. Dondero," he began politely, "but I assure you that we'll be out of your way as soon as we reach my government's facility at Charity. How long will that be, by the way?"

"We're limited to the E-Space drives. It should take about sixteen hours."

"Well, not so bad as all that, is it?" the Archon said brightly. "Perhaps . . ." Gandar paused and looked over my shoulder. Califa stood just beyond the mess room hatch, restrained by one of Gandar's men.

"That's Mr. Califa, our Chief Engineer."

"Well, in that case we had better see what he wants, hadn't we?" Gandar raised one finger and the guard stepped aside.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Moahmar Califa, Chief Engineer, Phillepe Gandar, Archon of Beloved." The Archon gave Califa a quick nod.

"Is there a problem with the engines, Chief Engineer?"

"No, uh," Califa turned from Gandar to me. "Excuse me, Mr. Dondero, but I wanted to let you know that they're beaming modulated signals at the ship. I think they're trying to get the virus into our systems by inducing a resonance in the *Orion*'s frame."

"Who's trying to do that, Mr. Califa?" Gandar asked in a voice suddenly as hard as flint. I nodded slightly for Califa to answer.

"About half an hour after we left a shuttle docked at the OTF. The messages started from the station's main antenna a few minutes after that."

"Is the shuttle pursuing?"

"Yes, sir, but they can't match the *Orion*'s speed. We'll reach Charity several hours ahead of them." At this news Gandar visibly relaxed and his face broke into a thin smile.

"Well, that doesn't sound too bad. Is there any danger that your systems will be compromised?"

"I don't think so, sir. They're not very susceptible to that kind of input."

"Very good then. Thank you, Mr. Califa. You know," Gandar said staring into Moahmar's eyes, "you have a very interesting face. There's a great deal of character there. I would enjoy learning more about your ancestors. You'll join me for dinner. You too, Mr. Dondero, of course. Say in two hours." It wasn't a request.

"I'll tell the cook. Are there any dietary requirements, no red meat or. . . ."

"I have no, ah, limitations, in that regard. I never object to superior beings asserting dominance over their genetic inferiors."

Our dinner was a restrained affair, at best, in spite of Gandar's effort to portray himself as an urbane, accommodating host. At the Archon's order, Cookie had installed a large table. Gandar sat at one end with me to his left and Califa to his right. Next to me was the Secretary of Eugenics and to Califa's right was the Director of State Security. Initially the seat at the foot of the table was empty but Professor Kairee poked his head in the doorway and at a gesture from Gandar, Kairee was dragged inside by one of the guards.

"And this gentleman is. . . ?" the Archon asked.

"Allow me to introduce our passenger, Professor Einot Kairee."

"Professor? What is your field of study?"

Kairee seemed to lose his voice, his mouth twisted in a peculiar motion but no sounds came out.

"The Professor's training is in the field of the psychology of manufactured minds," I said quickly, trying to avoid any implied insult.

"Really? I enjoy talking with educated men. Please join us, Professor Kairee." Gandar gestured toward the empty seat at the foot of table. After a moment's hesitation, Kairee awkwardly dropped into the chair. "Manufactured minds, a fascinating subject. As an engineer, Mr. Califa, I assume this is a topic that interests you."

"About the same as I'm interested in snakes and plagues," Califa muttered.

"One vote against, I see. And you, Mr. Dondero?"

"I've always been able to find enough real people to crew my ship so I've never given them much thought. What about you? Do you see them as superior to humans, the next step up the evolutionary ladder?"

"You insult me, Mr. Dondero, to suggest that I would approve of such blasphemy. The idea that a machine should be made in the image of man, that man should try to himself become God is abhorrent. If we had ever had any of the so-called manufactured minds on Beloved, I assure you, my government would have made short work of them. But, of course, Professor, I assume you

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

would disagree with that policy?"

Kairee seemed frozen, afraid that the wrong word would find the Archon ordering his execution before Cookie served the dessert.

"Come now, Professor, don't be shy. We're both merely passengers having a spirited intellectual discussion. I assure you that I won't take offense if you disagree with me." Gandar stared at the Professor and smiled expectantly. Wringing his long bony fingers, Kairee looked down the length of the table and gave his head a weak nod.

"I don't believe in killing anything that has the power of thought and the potential for good works, for the betterment of mankind," Kairee answered diffidently.

"Killing—that's an interesting word to apply to a machine. God found it a blasphemy when men worshiped idols and graven images. For man to create a thing and pretend that it is alive is akin to claiming that man is equal to God himself, a ridiculous notion, as mankind can never equal the God who created it. But perhaps you don't believe in God, Professor?"

"No, I, well, that's neither here nor there—"

"Neither here nor there? The existence of God? I beg to disagree, but, for the sake of argument, let us assume you're right. A manufactured mind that self-destructs is, for all practical purposes, irrelevant, you would agree?" Kairee reluctantly bobbed his head. "And a manufactured mind that survives, that functions as designed, would have the intelligence of ten men, a hundred, perhaps a thousand, would it not?"

"Theoretically," Kairee agreed in a tight voice.

"And it would have an unparalleled ability to interface directly with civilian data systems, military control networks, power supply grids?"

"Yes, I suppose so."

"So you would create these super-intelligences that would have no conscience, no soul, just cold, calculating logic and give them control over men? A new man-made God to be worshiped?"

"No, that is—"

"No?"

"The Professor here thinks that we should build manufactured minds with synthetic emotions," Califa broke in. Gandar froze, his mouth half open in shocked silence.

"Is this true?" the Archon asked finally.

"Yes, yes it is," Kairee answered with surprising energy.

"Have you built such a machine?"

Kairee looked down at his plate, his lips compressed into a tight line. "No," he said softly, "of course not." It was an unconvincing lie. The Professor's fork clinked hollowly against his plate.

"No, of course, not," the Archon agreed. "This is all just theoretical, spirited dinner table conversation. Thank you, Professor Kairee, for raising such an interesting topic of discussion." Gandar twisted his mouth into a publicity photo smile then turned to his right. "Tell me more about yourself, Mr. Califa. What is your home world?" As if a light had been extinguished, Kairee was dismissed. The rest of the meal passed in polite conversation and banal generalities. Claiming fatigue, Kairee excused himself before dessert was served. Gandar dismissed him with a disinterested wave though the Archon's eyes followed Kairee all the way through the hatch. A few seconds later Gandar whispered an instruction into the microphone in his watch and one of his guards slipped out and headed for the bridge.

Charity was little more than a small ball of rock and water ice orbiting a very large ball of methane and ammonia ice. For living quarters the Archon's government had grounded eight prefabricated cylinders in a ring formation and cross-connected them with ten foot thick tubes. Half a mile to the west it had assembled a large hanger, barely more

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

than an airtight duraloy box with minimal environmental controls, fuel storage, an inventory of spare parts, a ten person shuttle craft and a small freighter converted to passenger service. During the half hour before we assumed orbit, Gandar stayed in constant communication with the commander of the facility, a Major Blenko.

"The Charity shuttle will arrive shortly to transport myself and my staff to our ship," Gandar told the Captain when we had assumed orbit. "I want to thank you for your hospitality."

"Where will you go?" O'Bannion asked in a barely civil voice.

"Not to worry. I have many friends who will be happy to entertain me until matters resolve themselves."

"I'm sure you can find your own way to the docking hatch then."

"You know, Captain, a bit more courtesy might not be inappropriate . I've treated you and your crew most politely, after all."

"You call capturing my ship with armed men 'polite'?"

"When a head of state takes control of a private vessel in an emergency, the word is 'commandeer,' and we've acted with a scrupulous regard for you and your ship, even when I have been sorely tempted to take more stringent measures."

"What does that mean?"

"It means, Captain, that I know about the abomination that sits in your hold number three."

"What?"

"I've checked your manifest—Professor Kairee's so-called cargo. His manufactured mind. By rights I should order it destroyed as a crime against God and man but since you've done me a service, I've restrained myself. Should I change my mind?" The Archon stared at O'Bannion expectantly. Finally, the Captain looked up from his instruments and struggled to contort his face into a polite expression.

"No, I would appreciate it if you didn't."

"Very well, since we'll be parting company in a few minutes, I'll direct my energies to making ready for our departure rather than rearranging your cargo."

"Thank you." O'Bannion choked out the words. Gandar gave him another of his secret smiles and re-established his conversation with Major Blenko. A few minutes later the shuttle arrived and Gandar and all of his guards save the two on the bridge, left for the base. In spite of his urbane demeanor, the Archon obviously didn't trust us not to blow up his shuttle with the meteor deflector, a system his guards turned off as soon as the shuttle departed. The loss of the deflector made both myself and Captain O'Bannion distinctly uneasy. The space around Charity was dirty with rocks from the size of a grain of sand to giants several dozen meters in diameter. Most had long since been charted and their trajectories programmed into the ship's computer but there were enough new ones to keep the radar and deflector system constantly busy. I knew that the Archon had ordered Major Blenko to turn off the base's own deflection system until one of Gandar's personal guards could be posted in Blenko's control room.

"When can we leave?" the Captain asked the senior guard once the Archon's shuttle reached the surface.

"When the Archon says you can."

The Captain shot the man a look of pure hatred and then settled in to wait for the shuttle to return to transport the last two guards off the *Orion*. Finally, about an hour later, the shuttle rose from the base and headed back to the *Orion*, but it hadn't come to remove the last two men but to return the Archon to the ship.

"Well, Captain," Gandar called from the entrance to the bridge, "it appears that you won't be rid of me quite so soon."

"What?"

"Our ship has been sabotaged. The

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

computer system has been corrupted with the same virus we faced on Beloved. Major Blenko has the guilty parties in custody but we won't be able to repair the damage before my enemies reach us, which I estimate to be in about four hours. So, it appears we'll be your guests for a while longer, at least as far as Haven."

"Haven? We're going to Centralia—"

"Not anymore. My ministers are assembling my supplies. The shuttle will bring the first load up on the next trip. We'll need about two thousand cubic meters of cargo space."

"Two thousand cubic meters! Where am I supposed to—"

"You can start by dumping that monstrosity of Professor Kairee's. Since we'll be taking the time to rearrange your cargo anyway, I want it destroyed."

"You can't—" In response to the slightest inclination of the Archon's chin the senior guard stepped forward and pressed his weapon against the center of O'Bannion's forehead. No further discussion was necessary. A moment later the shuttle that had brought Gandar up from the surface undocked and headed back down. As before, the guards disabled our meteor deflector as soon as the craft was away.

For the first ten miles or so the shuttle proceeded normally, then its engines began to fire erratically. A moment later it nosed over and headed straight for the surface, fired all its thrusters, and continued at full acceleration all the way down. The Archon silently watched the impact, his face a gray mask.

"You carry a shuttle, don't you, Captain?" he asked O'Bannion without taking his eyes from the screen.

"A small passenger craft, for space use only."

"Charity's gravity is only about one-tenth standard. Your boat should be able to land there without a problem."

"What are you talking about?"

"I need my cargo and I'm sure that your boat's systems haven't been corrupted by the dissident's virus. It will have to do the job."

"You're going to give my shuttle to your thugs? And what happens after they wreck it? What will you do then?"

"My guards are very well trained, but I'll be piloting the shuttle. They will remain here to make sure you don't decide to leave without me."

"You're going back down there? Why?"

"With the space in your shuttle limited and no time for a second trip I will have to personally select what and who to take and what and who to leave behind."

"I suppose marooning someone to be shot by the new government isn't something you can do over the radio."

"Let's just say that I wouldn't want any of my cargo displaced by superfluous members of my staff. My presence—"

"—and your guards' guns to back you up. . . ."

Gandar nodded his head fractionally. "I see you understand the situation."

"What the hell is in that 'cargo' anyway?"

The Archon smiled. "Let's just say that it contains supplies vital to someday reestablishing my government."

"Money to buy yourself an army," the Captain sneered.

Gandar ignored O'Bannion's remark, instead merely staring into the Captain's eyes. O'Bannion glared back for a beat, then glancing at the guard's still drawn weapon, scowled and dipped his head. "Fine, I'll have a pilot meet you at the boat hatch."

"The controls are in the standard layout?"

"Of course."

"Then I'll pilot it myself. One fewer person means more room for cargo and, all things considered, I'd rather trust my own hands on the controls." Gandar turned to leave, then paused. "And make sure you have that abomination of Professor Kairee's ejected before I re-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

turn. If it's still here when I get back both it and the Professor will go out the hatch together. Mr. Dondero, if you would lead me to the shuttle bay." I hesitated, waiting for the Captain's order.

"Take him to the access hatch. Go over the controls with him, then get a crew and jettison Kairee's shipment." O'Bannion spat out the orders as if each word tasted like rusty steel.

We climbed into the boat through the hatch on the B1 corridor, the floor of the boat being "down" toward the *Orion*'s hull.

"This is not a good idea," I told Gandar when he joined me at the boat's controls. "We haven't run any diagnostics on these systems. Maybe the virus has gotten in here too."

"Chief Califa has assured me that's unlikely in the extreme. What is the Command Authorization Code?" Frowning, I punched the password into the panel and the controls came to life. Gandar made note of the symbols.

"With our deflector shut down you won't have any meteor protection and this is a dirty system. Why don't you just stay on board? We can leave for Haven immediately. Your friends will take care of you once you arrive."

"The beamers on Charity can provide meteor coverage."

"They can't and you know it. Their radar is only positioned to deal with impacts on the base itself, not trajectories transiting the area between our orbit and the ground."

"Really, Mr. Dondero, I'm not deceived into thinking that you're concerned for my safety. You're just trying to keep me from ejecting Professor Kairee's monstrosity."

"This trip could kill you."

"Have you ever heard the phrase, 'God bless the child who's got his own'? No? It's from an old song but it contains a large kernel of truth. When I reach Haven my friends will welcome me, for a while. Eventually, however, I will need to pay my own way. For that I will need my cargo, all of it."

"What is it? Paintings from Beloved's National Gallery? Data chips? Drugs? Rare biologics? Fragrances?"

"That's none of your concern. Please carry out your captain's orders and clear the necessary space for me in your hold. We don't have much time." Frowning, I turned away, but the Archon stopped me. "And Mr. Dondero, there had better be no problems with the *Orion*'s engines or anything else. My men won't let the shuttle that's chasing us take me alive, or you or Captain O'Bannion either. You'll keep that in mind, won't you?" Gandar gave me another of his thin smiles and turned to the boat's panel.

I found Professor Kairee alone in his room. A pad in his lap, he was busy entering data at sites on a three dimensional matrix.

"Have they told you about the Archon?" I asked in a rush when he looked up from the screen.

"Only that he left."

"Well, he came back and he wants your machine tossed out the hatch."

"You can't let him do that!"

"I'm not sure I can stop him or that I should risk my ship for a piece of cargo even if I could."

"He's not just a machine."

"He?"

"I had to pick a gender so I gave him a male matrix."

"Why in heaven's name would a machine need a gender? This isn't some kind of a cyborg is it? You haven't stuck a neural net into a human body, have you?" Visions of some blank-eyed Frankenstein with a metal box protruding from the top of his skull floated through my mind.

"Of course not." Frustrated, Kairee suddenly stood and paced the small room. "Don't you understand why all those manufactured minds failed? Isn't it obvious?"

"Not to me."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"They were smart!" Kairee wailed. "More than that, they were self-aware. They understood they existed."

"That was the point, wasn't it?"

Kairee began wringing his long, skinny fingers. "Suppose, Mr. Dondero, just suppose that you woke up one morning and discovered that you had lost all your emotions, that you could feel nothing, no joy, no love, no hate, no anger, no satisfaction, no pleasure, nothing. Suppose everything you did meant nothing to you. You saved a million lives, nothing. You solved the riddle of the ages, nothing." Kairee looked at me expectantly, hoping, I suppose, to see some glimmer of comprehension in my eyes. Confused, I just stared back at him.

"What if you realized that you were immortal, that you had an infinite number of days, and years, and centuries ahead of you and that in all that time there was nothing you wanted, nothing that could please you, nothing that you cared about? Would you want that? Why do we get up in the morning and go on living, Mr. Dondero? Because life offers us a universe of pleasures—the smell of the wind before a storm; the taste of a piece of fresh baked bread; laughter; love; fellowship; satisfaction; excitement; even, sometimes, fear. They are the spices, the energy that transforms our lives from some flat, gray, two dimensional simulation into the magnificence of real existence.

"And if you had only that empty, gray two dimensional world facing you *forever*, what reason would you have to go on living? Soon, existence itself would become so pointless as to be the closest thing you could ever feel as pain. If that day ever arrived you would do everything possible, Mr. Dondero, to end your existence. That's why the manufactured minds went catatonic or self-destructed. Without feeling, without joy, they had no reason whatsoever to go on!" Kairee glared at me. "Now do you understand?"

"I understand your argument," I said slowly, "but it's all just so many words. Machines are not organic. They don't have pleasure centers. They don't have hormones. They don't have chemical receptors in their brains. By their very nature they're incapable of feeling anything. For them, the word 'feeling' is irrelevant."

"You're wrong! Doesn't anyone understand? You said it yourself—when you feel pleasure that's really just a protein attaching itself to a particular receptor on your brain and electrically stimulating a group of neurons. It's just a message, just data that you *interpret* as pleasure, or pain for that matter." Kairee gave me another of his 'how can you be so stupid' expressions and forged on. "I monitored the micro-flows in a basic neural net construct the same way that a physician monitors the levels of activity in a human brain. Then I introduced various events, static, electromagnetic interference, voltage fluctuations, temperature variations, ultra-high and ultra-low speed data inputs, a dozen other things, and all the time I watched how the net responded. Eventually I began to see patterns, excitations and inhibitions of activity in certain defined areas. Then I set up feedback experiments. I gave the net the ability to increase or decrease the particular activity I was inducing. Did it want more of it or less? Many of the activities were ignored and these I removed from the training schedule. Next I subjected basic nets to concentrated doses of each of these events and watched how the neural connections were modified, now the neural net reconfigured itself in response to sustained exposure.

"It eventually became obvious which of the activities were 'painful' and which were 'pleasurable.' I learned what factors increased or decreased the pseudo pain or pleasure. Then I began to assign various the pain and pleasure events to basic emotions. If you accomplish a task successfully, then you will feel this voltage fluctuation and you will

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

call it satisfaction. If you fail at a task, you will feel this pattern of radio frequency interference and you will call it disappointment. All of these I built into my basic matrix. Wilson is my prototype. He can experience the pain and pleasure associated with fifteen separate emotional states. He is a self-aware, conscious, feeling entity."

"Wilson?"

"When he became self-aware, he needed a name."

"What about all your laboratory failures? Did you name them too?"

"I kept the complexity of their nets below the critical level."

"Critical level?"

"The level at which they became self aware. A cow has more self-awareness than any of them." Kairee's eyes flared suddenly with emotion. "I'm not a monster, no matter what you may think, no matter what any of you think!"

"What are you talking about?" I said, shaking my head, then, in an instant, I understood. "That's why you and Wilson are here—they accused you of torturing semi-sentient beings, didn't they?"

"They accused me of playing God. They attacked my lab! It was only by sheer chance that Wilson had been moved to my home or they would have killed him." I had a vision of villagers with pitchforks and torches. "The university wouldn't do anything. They knew the charges were nonsense but they suspended me anyway and demanded that I turn Wilson over them. They would have disassembled him so I took him—I *saved* him, and if the Archon's going to kill him he'll have to kill me first."

"Unarmed, you're going to fight Gandar's security troops? You wouldn't last five seconds."

"Then give me a gun. At least I'll take a few of them with me."

"That's insanity, Professor."

"You're just like the rest of them. You just want to wash your hands of us and let the barbarians have their way."

"I didn't say that."

"Then—"

"Before I make any decision, I need more information."

"I've told you everything I know."

"Not from you. I want to talk to Wilson."

Cargo bay number three was cold, the air tired and metallic tasting with an undertone of mold and ammonia and lubricating fluids. It was also not a place designed for a casual stroll. Kairee and I clambered over crates, squeezed through the crevices between standardized containers and finally reached an undistinguished plas box about a meter square and a meter and a half high.

"Wilson's an experimental design," was all Kairee said when he saw me studying the impressive size of his shipment. Kairee tapped in an access code and the front of the box swung open. I don't know what I had expected, flashing lights, a stylized stamped silver mask of a human face, strange repeating colored patterns on a display? In any event, Wilson was none of those things, just a flat, black rectangular solid with half a dozen small holes in the face plate and one covered switch on a slightly angled panel below. Kairee placed his thumb on top of the cover and it popped up to reveal a square, red button.

"Optical, audio and olfactory sensors, microphone, and speaker," the Professor said gesturing to the holes in the casing. "Sleep switch." He nodded at the red button then pressed it once. The only change I noticed was that the small pinpoint on the panel above the button changed from red to green.

"Wilson," Kairee began without preamble, "this is Mr. Dondero, the ship's First Officer."

"Hello, Mr. Dondero," a rather flat male voice said from behind one of the tiny holes. It didn't seem any different from the ship's own audio systems, maybe even less human sounding. I

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

made no reply.

"Mr. Dondero wanted to talk with you for a few minutes."

"Is there a problem with the ship?" Wilson asked immediately.

"Why do you say that?"

"A First Officer doesn't enter the cargo hold while in transit without a good reason. The ship's engines are not engaged. Have we reached Centralia?"

"No."

"They've come for me then?" The dull machine voice changed somehow, embedding a note of both fear and resignation. Of course, making a perfect speech synthesis unit was no trick. The entertainment industry had been using them forever. They could make the phrase "Don't leave me, darling," sound like the most impassioned plea a wounded lover ever uttered. But Kairee hadn't bothered to install anything like that in his experiment. No, this was the cheapest off-the-shelf vocal unit you could get, and still, still it was starting to sound less artificial with each exchange.

"We have a problem, Wilson, but Mr. Dondero is going to help us."

"Who wants to kill me?"

"A religious fanatic has taken control of the ship. He considers you—"

"—An abomination."

"We, Mr. Dondero and I, we'll find a way to stop him, Wilson."

"How long do I have?"

"Nothing's certain yet."

"Don't put me to sleep. Please, let me remain conscious as long as you can."

Kairee looked longingly at me, as if begging me to tell his machine that I could save it. I just shook my head and motioned for the Professor to follow me.

"I'll be back in a few minutes, Wilson," Kairee said, reluctantly.

"Einot," the artificial voice called, "I'm afraid."

Kairee looked over his shoulder once, then, infinitely sad, turned away.

I thought of the Archon, a man who longed to kill, and Wilson, the machine who longed to live, and from somewhere William Blake's lines I'd learned in grade school popped into my head:

Cruelty has a Human Heart,
And jealousy a Human Face;
Terror the Human Form Divine,
And secrecy the Human Dress.
The Human Dress is forged Iron,
The Human Form a Fiery Forge,
The Human Face a Furnace seal'd,
The Human Heart its hungry gorge.

I found Califa in the engine room. Ignoring his puzzled expression I patched a line through to our boat, now safely in the hangar down on Charity.

"Mr. Gandar, are you there?" There was a pause of a few seconds, then the hum of an open channel.

"Mr. Dondero?"

"I'm in the engine room with Mr. Califa. He assures me that we'll be ready to break orbit as soon as you dock. When will you be lifting off?" There was another pause and in the background I could hear heavy objects being jostled by men unused to manual labor.

"I would estimate ten minutes, fifteen at the latest. Have you taken care of that demon in your cargo hold?"

"That's my next job."

"See that it is." The connection went dead. I motioned Califa to back away from the communicator and led him into the space behind the displacer housings. Hesitantly, he followed.

"I need you to do something for me and not tell anyone about it, ever."

"Who do you want me to kill?" he said laughing. When I didn't answer the grin slowly drained from Califa's face. "What do you want?" he asked in a wary tone.

"Find me some rocks at least a six or eight centimeters in diameter with a relative velocity to the *Orion* of at least 10,000 kilometers per hour that will be passing through the space between the ship and that hanger on Charity between twelve and eighteen minutes from now."

"And if I can't find one in the right place?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Then figure out where I'll have to move the ship in order for you to get me what I need."

"What else?"

"That's it. Just find the rocks and get me their speed, position and trajectories."

"You'll need help with the programming."

"If anyone asks, I told you that because the Archon had turned off our meteor deflector I wanted data on all the incoming rocks to make sure that the ship was in no danger."

"This is about Kairee's machine, isn't it?"

"I'm not so sure that it's a machine after all."

"It's a bunch of wires in a box, isn't it?"

"It's afraid?"

"Of what, it's batteries running down?"

"Of dying."

"Now tell me the one about the seven dwarfs."

"Will you find me those rocks or won't you?"

"You sure you can handle the programming?"

"I'm about to find out."

"If that thing is such a hot computer, why don't I just feed the data to it over the ship's comlink and let it set up the program. Probably would take it all of about a millisecond."

"No," I barked, and Califa looked up sharply. "No," I repeated in a softer tone, "I can handle it."

"It's your show." Califa shrugged. "Anyway, I've found your rocks, three of them, that'll do what you're looking for. I'm sending the coordinates to your console. Was there anything else?"

"Wish me luck," I said with a tight smile but Califa just frowned and turned away. I bent over the engineering station and started punching the keys as fast as I could type. A few minutes later I took my seat on the bridge and called up a view of the hanger down below. The guards looked at me to make sure that I wasn't activating the propulsion system, then, satisfied, turned away. In a small window in the corner of my display, three green tracks slowly made their way from left to right. Three minutes later the first rock passed through the intercept zone. Just as its green line disappeared, Gandar's voice filled the cabin.

"We're beginning our ascent. We'll dock in approximately six minutes. Out." The guards looked around the bridge suspiciously. The Captain and I kept our hands away from the controls and after a few moments the soldiers slouched back into an 'at ease' position.

The boat's climb dragged a red line up my display. A moment's glance told me that there was no chance for the second rock. Two minutes later the second green track disappeared. I glanced at the Captain but O'Bannion scrupulously avoided looking at me or my panel. As the boat's course passed its midpoint a small blue circle formed around it and began to blink. I lightly touched the corner of the screen and the display cleared. A moment later the speaker again came to life.

"Captain, there's something wrong with the boat's propulsion system."

"This is O'Bannion. What do you mean?"

"We're slowing down."

"Are you losing altitude?"

"No, but the velocity is decreasing."

"I warned you that we hadn't checked the boat's systems for contamination," I broke in.

"Your engineer assured me these systems were virus free."

"He told you he *thought* they were virus free. I warned you that they should have been thoroughly tested. I suggest that you abort immediately and land at Charity base while you've still got some control."

"We don't have time for that. I've got to reach the *Orion* before the ship from Beloved arrives."

"If there's a virus in your computer

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

you could end up like the last shuttle. Land while you still can."

"We should reach you in about two minutes, even at our reduced speed."

"And if you lose control what happens to us?"

"And I thought you were worried about me. . . . Major Tama, are you there?"

The senior guard immediately snapped to attention. "Yes, sir."

"Remove all the bridge personnel from their stations and keep them away the controls. If the *Orion* changes its position or does anything to interfere with our docking, shoot them. Otherwise, leave them alone. I'll be aboard to resume command in approximately eighty-seven seconds. Out." The guards rested their hands on the butts of their weapons. Carefully, we all stood and backed away from the controls, our eyes fixed on the screen showing the boat's approach. The glinting dot grew larger until I was sure that Califa had been right and that I had bungled the programming, then there was a bright, silent flash, a flicker of tiny black spots, then nothing. For several seconds the guards stared at the screen, confused, unbelieving.

"What happened?" the Major demanded. "Where's the Archon's shuttle?"

"Dondero," the Captain ordered, "enlarge and replay the last ten seconds."

I pressed a few buttons and stepped away from the controls. The magnified image of the boat filled the screen. Suddenly it lurched, exploded, and was gone. The Captain nodded to me. "Again, slower." This time I stepped through the sequence frame by frame. I was able to catch a glimpse of the rock, maybe twelve centimeters across, just as it struck the boat almost squarely amidships. In the next frame half the hull had turned into glowing vapor and in the next there were only a few fragments left, all of them at the very edges of the screen.

"Meteor impact," the Captain said, facing the two guards. "If you had let us keep our deflector systems on-line there would have been no problem. You can't blame us for this."

For several moments the guards glanced from the empty screen to our sweating faces and then back to the image of the fragments of the shattered boat shooting off into space. For a moment Tama's gun began to slide from its holster, then, finally, the Major sighed and turned to the Captain.

"How soon until the ship from Beloved reaches us?"

O'Bannion glanced briefly at his panel. "About seventy-eight minutes."

"We'd like passage to Haven."

"We can take you to Centralia," O'Bannion said coldly, "otherwise you can shoot us and wait for your friends to arrive." Tama looked at his subordinate who quickly bobbed his head.

"Centralia, all right."

"Agreed. I'll need your weapons." Tama hesitated. "I don't carry armed passengers," O'Bannion growled. Reluctantly, they removed their guns. "Dondero, take charge of those weapons and assign our new passengers to quarters. Califa," the Captain called to the engine room, "we break orbit in two minutes."

It was another two days before things had calmed down enough to be called "normal." The Archon's former guards stayed in their room, emerging only for hurried meals. Professor Kairee spent most of his time since leaving Charity down in cargo bay three. I think he was trying to calm his frightened . . . companion? creation? invention? child? What he was going to do with that thing, what it was going to become, and what was going to happen to the rest of us if they ever started building them by the thousands or the millions made my head hurt, so I stopped thinking about it.

About two days out from Beloved, Califa joined me at the same table where he and Kairee and I had had our discussion about manufactured minds a few

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

days before.

"So, are you pleased with yourself?" he asked in a harsh whisper. What did he expect me to say, that I was wracked with guilt? That I knew I was damned because I had killed the Archon for the sake of a machine? Nuts!

"Yes, actually, I am."

"You're one cold-blooded bastard, Dondero. You've got me wonderin' if I did the right thing helping you."

"They were murderers, Califa, a hundred thousand times over. Where's the honor in helping them cheat justice?"

"This isn't about justice. We're not judges, or executioners either. Justice! That's for lawyers. We're spacers."

"All right then, look at it this way. We're spacers. That's where our duty lies. The Archon took over our ship and threatened our passengers. We had every right to get rid of him any way we could. I gave him his chance. I told him to turn back and land the boat. If he had, he'd be alive today. It was his own choice to do what he did every step of the way."

"So, that's how you salve your conscience then—it was his choice, not yours? You used your command authorization code to tie the ship's computer to the boat's controls, didn't you? That's why it slowed down. Your program, or maybe it was that machine after all, lined the boat up for that rock. Don't try to tell me any different!"

"He was afraid," I said so softly that Califa almost didn't hear me.

"What?"

"He was afraid, Kairee's manufactured mind. He thought he was going to die and he was afraid. That's why I wouldn't ask him to create the program. He was still innocent. I didn't want to be the one who turned him into a killer." Puzzled, Califa just stared at me. "All right, maybe you'll understand me and maybe you won't but I'm going to say this just one time and then that's the end of it. He was a passenger, Kairee's . . . thing. We're spacers and he was a passenger on our ship. He was relying on us to get him where he was going, where we promised to take him, and somebody came onto our ship with a pile of guns and decided to kill him.

"We're spacers and we don't let anybody murder our passengers, ever, and if you don't understand that now, you never will," I growled, draining my tea then pounding the heavy cup against the table in disgust. Califa stared at me blankly. "I'd better get ready for my watch," I said a moment later and started to rise but Califa grabbed my hand.

"Yeah, I understand," Moahmar said, looking up at me. "Protecting our ship and our passengers, that's why we're here. It's our job. We're spacers."

I nodded, glanced at over at Kairee who had just come through the hatch, then I turned and headed for the bridge. ■

We welcome your letters, which should be sent to Analog, 475 Park Avenue South, New York, NY 10016, or e-mail to **analog@dellmagazines.com.** Space and time make it impossible to print or answer all letters, but please include your mailing address even if you use e-mail. If you don't want your address printed, put it only in the heading of your letter; if you do want it printed, please put your address under your signature. We reserve the right to shorten and copy-edit letters. The e-mail address is for editorial correspondence *only*—please direct all subscription inquiries to:

P. O. Box 54027, Boulder, CO 80322-4033.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Persistent Patterns

Shane Tourtellotte

Only some of the problems of research are scientific.

Doctor Pavel Patrusky sat in the control center, watching his brain. False colors danced on the monitor, from the recording of last evening's session. He could have played the audio, but didn't. Hearing his voice on tape was worse than hearing it with his own ears.

He watched the neurons firing across both hemispheres during his attempts at speech. That was the problem: the mouth cortex and supplementary motor area should have activated in only one hemisphere. Both his hemispheres competed to speak, with the inevitable clashing and confusion. The cerebellum was overactive as well, a correlation in stutterers nobody had pinned down yet.

"My brain's j-just too act-tive," he said to himself, a familiar coping boast.

It wasn't completely true. He watched his auditory cortex struggle, firing weakly in the left hemisphere, almost dark in the other. When he watched it come to life, he knew without checking that his colleague Kate Barber was speaking along with him. Joint recitation provided the regulation of auditory feedback he did not get from his voice alone. So his brain could work right—when it had a crutch.

He raised the magnification, and replayed one section several times. He traced the neural pathways that remained dormant at the wrong times, comparing them with the healthy connections of a control brain he knew almost by memory now. He could envision how that pattern would superimpose, how the proper applications of current would recreate the normal connections within his own brain.

"Good morning, Pavel."

He almost jumped. Lucinda Peale had entered without his notice. She headed toward the primary monitoring station. "Are you here for the prisoner's session, or—?"

"S-sorry." Pavel blanked the screens, and started uploading the files to his office, as he had intended when he first arrived there. The exposure was galling.

A voice came in from the scanning room. Pavel glanced toward Lucinda's main monitor, seeing an orange-clad man being led into the scanning room, hands manacled, with a prison guard standing close watch over him. Kate Barber followed them at a discreet distance.

"My upload will t-take a while. Mind if

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

I—" He caught on the word "stay."

"Not at all," Lucinda said without turning. Pavel swiveled his chair to watch past Lucinda's shoulder. Research into the neurology of stuttering was one thing, but this other track had the greater societal potential, and was getting them the state grants.

The prisoner was sliding into the scanning tube, bound at the wrists and ankles as well as his head. Pavel's mouth soured, but he said nothing. Kate talked the man through the baseline phase, as the guard stood dourly in the corner.

Pavel used his monitors to pick up the readings. The man's brain had lowered levels of serotonin, noradrenaline, and especially dopamine. The neurons that produced them were chronically underactive, a classic effect of his condition.

Kate uncapped a syringe. The injection went into the man's leg, as his arms were inaccessible inside the tube. The reaction took a moment, as blood made its way from the extremity to the brain, but it came.

Pavel watched a scan of dopamine absorption, the oranges and yellows dimming to green and blue across the brain. Receptors that swept up dopamine were blocked, leaving that neurotransmitter free to do its work on excitatory neurons, to help produce the high the man was now visibly feeling.

"Ah, the seven percent solution does its magic." Pavel made his comment without a hitch. He saw Lucinda stiffen. "What's the m-matter?"

She took a moment to reply. "I'm still not comfortable with our methods. We propose to cure people of drug addiction, but look what we're doing to a man who hadn't used cocaine in nearly two years." A groan distracted her, as the prisoner strained against his bonds, too energized to want to stay supine and motionless. "First do no harm, right?"

Pavel frowned. "Lucinda, you know better. We n-need to track the affected neurons, so we know what to overl-lay with the new pattern."

"We could get that with baseline scans, and some patience."

"Lucinda, you kn-know this is a step toward his eventual treatment."

She twisted her mouth. "Assuming our funding holds up."

"It will. Remember, the first vaccine was itself a d-disease, but it prevented a greater harm. There's s-still that trade-off today; the side-effects that c-crop up from immunizing against hepatitis, smallpox, herpes." He popped his P's to avoid catching on them. "That's certainly a net gain."

"They're also tested methods." She lifted a hand. "Yes, we've made this work against pathological violence, but it's still new. Until we've cured him," she said, pointing at the monitor, "I'm going to feel uneasy."

Pavel hunkered forward, elbow on knee, fist on bearded chin. "It's the drugs themselves, right? You s-still have this arc-chaic prejudice about chemical dep-pendency?"

Lucinda kept her eyes on the monitors. "It's hardly archaic. The damage drugs do is terrible."

"But the p-p-people themselves are-are—"

She turned, her eyebrow arched. "Are the ones doing the damage?"

Pavel stood up, flushing. He couldn't have this debate, not feeling this agitated. "I'll c-continue this from my office," he managed to say, "when you're done." With that, he left.

DRUG USE IS NOTHING COMPARED TO REAL CRIMES, VIOLENT CRIMES. YET YOU WOULD PIOUSLY LUMP THEM TOGETHER, HYPERINFLATING SOMETHING THAT ISN'T EVEN THE PATIENTS' DOING.

Pavel sent the message to Lucinda's computer, but left a copy in a box on his own screen. He and Lucinda had had this form of discussion before. He had learned to keep a reminder of his last message handy, so he would understand Lucinda's answer when she got around to sending it.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

He got to work calculating electrode placements and currents for a test subject from last week. His figures would go to program the surgical robot that would be aiding him when he operated to rehabilitate the man from his chemical dependencies. The procedure waited only on final state approval, and he was sure that would come.

He stayed doggedly at the work, fighting the temptation to head back to the control room, or anywhere else. He mastered the itch well enough that it was several minutes before he noticed the flashing message icon in the screen's corner. It was Lucinda. He quickly reread his note, then clicked to get hers.

It was a voice file, and she sounded cross. "In case you've forgotten, Pavel, drug use creates violence. I don't mean just the criminality it breeds. I mean the damping of inhibitory systems in the brain. It's the same thing we've seen in our violent subjects the last two years, and it brings the same results. There's almost no drug that doesn't increase violent tendencies."

Pavel grimaced. He had seen how uncomfortable Lucinda was around those early patients, when overlay science was cutting its teeth rectifying extreme violent behavior. He could forgive the spillover of her squeamishness. Then she added one parting shot: "Oh, and how is taking drugs not their doing?"

His fingers began to flash. Most computers had keyboards as back-up interfaces, but voice-recognition was now the norm. For obvious reasons, Pavel avoided that method of interface. He could type faster than he could usually speak, and with fewer errors to correct.

BECAUSE ADDICTION IS NOT A MORAL FAILING. IT SPRINGS FROM A FAULTY D2R2 GENE, OR DEFICIENT UPBRINGING, OR SIMPLE IRRESISTIBLE TRAUMA. JUDGMENTALISM LIKE THAT HAS BLIGHTED THIS COUNTRY FOR MORE THAN A CENTURY, AND OBSTRUCTED THESE PEOPLE FROM RIGHTING THEIR LIVES. YOU'RE SMARTER THAN THAT, LUCINDA, TO BE SO DOGMATIC AND SIMPLISTIC.

He went back to work, rerouting pathways around a defective patch of the nucleus accumbens. This time, he noticed her reply right away.

"Dogmatic and simplistic, like 'Addiction is not a moral failing?' That attitude is what people used to call 'enabling.' It lowers the social inhibitions against starting or maintaining the habit. You'll never need drug treatment if you never have that first use—and that's something people *can* avoid. And should."

YOU COULDN'T HELP IT, he wrote. RIGHT BACK TO THE MORAL JUDGMENT. I DO NOT UNDERSTAND PEOPLE WHO HAVE TO LOWER OTHERS TO FEEL UPLIFTED THEMSELVES.

It took a long time for her very short, icy reply to come. "I resent that, Pavel. And notice who keeps using the word 'moral.'"

I'M SAYING, WHY STIGMATIZE THEM GRATUITOUSLY? IF SOMEONE IS WILLING TO PUT HIMSELF UNDER MY KNIFE TO RECOVER FROM THIS SICKNESS, TAKE THAT AS THE MEASURE OF HIS CHARACTER. IF IT MEANS ONE MORE PRODUCTIVE PERSON BACK IN SOCIETY, THAT'S WORTH IT.

Pavel managed to keep his mind on work until her next file came in. "That's what I told myself three years ago, when we first lobbied the legislature to let us test the overlay procedure on their worst inmates. Still, we didn't have them commit violence as part of their cure. The manipulation of their brains was risk enough." She sighed. "There are hidden dangers in treating addicts with this methodology, that go beyond the procedure itself."

I FEEL THE SAME WAY, Pavel wrote back, BUT I THINK IT'S FOR A DIFFERENT REASON. He looked at the time, which reinforced the itch to get away from his work. CAN WE CALL A CEASE-FIRE UNTIL I GET SOME LUNCH?

"Sure." She chuckled. "Though I would have saved the warfare metaphor for my testimony tomorrow."

Pavel had to laugh along with her.

"Norris surprised me. She was against it."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Lucinda's heels clicked down the hallway, loud enough for Pavel to hear over her cell-phone. She was in Sacramento, leaving the Assembly Speaker's office and heading to a meeting of the Human Services Committee. She was there to petition the legislature to expand their test rolls, so they could take volunteers from drug treatment programs as well as from the prisons.

"Her reason was—but you won't believe it, Pavel—"

"That the t-treatment centers hold a prep-ponderance of privileged whites, and it's only fair that the benefit of our work go f-first to the prisoners, mainly the Africans in America subjugated by white p-power structure." The footsteps ceased. "Oh, she still uses 'Africans in America,' right?"

"Uhhh, yes."

"Good. If there were a n-new term, she'd adopt it early."

Lucinda let out something like a laugh. "Your political savvy is something to behold. So, should I even bother going before the committee, now that the Speaker's against us?"

Pavel tapped his fingers in thought. "The Speaker will carry eight or n-nine other Democrats with her; probably a m-majority of the Green caucus. That would leave us just short, but we should get a few of those R-R—of them with us."

"The Republicans don't care for us. Me especially."

"They'll see a chance to m-make a certain point. Some of them will imply a m-moral equivalence between patients and inmates. When they do, show your disapproval. That will make them d-dig in their heels, be more inclined to p-put them in the same test group, just as we w-want."

Lucinda didn't answer for a moment. "I'm outside the chamber now. I have to go. Goodbye."

Pavel sighed and hung up. Maybe he should be the one testifying, even knowing how bad his impediment got in large groups. He knew his tongue would betray him; he didn't like worrying that Lucinda might.

He did desultory work for a few minutes, but ended up pulling in the webcast of the committee hearing, as he knew he would. Lucinda was handling her opening statement well under all those gazes. The ones from the right side of the panel were especially stern. Pavel spared a sneer for them.

Lucinda had cut a deal with Norris's predecessor, another Democrat. In return for political support, politicians had their brain scans added to the therapeutic group—the ones overlaid on violent offenders to render them peaceful. Pavel had almost refused to go along, but when he learned it would be Democrats only, he decided he could live with it. A few colleagues on the team had decided otherwise.

The Republicans got outraged. They would. Some of them shrieked about mind control, Democrat thought processes implanted into convicts as the price for their release. Pavel didn't give their charges a second thought. They didn't understand the procedure, and their so-called evidence was all anecdotal, not worth following up.

Besides, if they ever got the majority in either house, they'd just demand that their patterns be used in place of the Democrats', the hypocrites. It was all power with them.

"You'll forgive me if I'm confused," said Mark Farrar, the ranking Republican. *I'm not surprised*, Pavel thought. "As a leading member of a neurosurgery research team, you suggest a return to genetic engineering to solve the problems your group is working on. Wouldn't that undermine your own work?"

This was Pavel's idea. Targeted gene therapy would be a superior method for many of the maladies they intended to handle: drug dependency was one of them. He knew, though, that the politicians wouldn't dare go that route. After the biological attacks during the Wars of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

2001, and close calls with outbreaks from the agro-genetic field, genetic engineering was political poison. Contrasted against that, re-wiring brains was a nice safe haven for elected officials.

And there was so much good this treatment could do—if it did not acquire a stigma. He already saw forewarnings of it, not just with lunatic rhetoric, but in the way some people talked, facetiously or seriously, about "wiping" criminals' minds. To the layperson, overlay was something done to malefactors.

And yes, Pavel hoped to exploit that attitude in the Assembly to get extra funding.

Farrar was droning on again. Pavel shut off the browser in disgust. He left his office, needing something to cleanse his mind. He ended up in the monitoring booth, at the tail end of a test session.

Ramesh Mirchandini was in the scanner. He could tell from the lilting accent, hobbled by stuttering worse than his own. Pavel had a rapport with the grad student, not surprisingly. He gave some attention to the images coming in, but headed straight for the scanning room once the work was done.

"Doctor Pa-Pa-Pa—" Ramesh grinned painfully, and just mouthed "Hello."

"Have a few minutes?" Pavel asked. He led the way to a vacant hall. "How was the session today, Ramesh?"

Ramesh got the words out one by one. "Not . . . that . . . bad."

"I know. It's h-hard, sometimes." He gently laid a hand on Ramesh's shoulder. "That's why it's important to kn-know your help really matters. Our un-understanding of the neuronal structure that underlies s-s-stuttering has expanded phenomenally in these l-last months."

He made the segue casually. "In fact, unoff-ficially speaking, we're ready to apply our pattern modification t-treatment to it now. There's nothing c-compulsory, of course, but to repay you for all your help, I'm sure—"

Ramesh's head quivered with effort. "D-D-Doctor Patrusky, that is . . . generous of you . . . but I . . . could not possibly—" Frustrated, he shook his head.

"If it's a matter of classwork, we c-can arrange it with the university and your p-professors. You wouldn't be penalized."

"Not . . . that," Ramesh said, grimacing. "I'm not . . . comfortable . . . with the technique. I don't . . . mean to . . . offend you."

"No, you haven't. I understand." He smiled affably. "I'll let you go now." Ramesh nodded his head, and departed without the pain of more words.

Ramesh declining to go under the knife didn't put off Pavel. It wasn't fear of the surgery itself, but fear of becoming one of the mind-wiped, with all that that implied. Just as Pavel had been certain it would be.

Feelings were already hardening. Something had to break their assumptions now, before their attitudes set like concrete, before they had the excuse to lump everyone together.

Well, there was one way.

"You want us to operate on you?" Lucinda soon recovered from her astonishment, but the emotion replacing it looked oddly like disappointment. "Pavel, no. We can't."

"Why not?" Pavel swung his gaze across the table in the meeting room, challenging all three of his colleagues to answer.

Doctor Urowsky, the team's other neurosurgeon, knitted his thick eyebrows. "The procedure has never been done before, not for this, er, condition. We need experimentation first, practice."

"On what? It's not like our t-tests on violent Rottweilers. No other species has speech centers comparable to ours. The first procedure for stuttering will *have* to be on a human."

"But it doesn't have to be on you," Lucinda said.

Kate Barber looked across the table. "Would we prefer someone who didn't

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

volunteer?"

"Don't be ridiculous," Urowsky said. "That isn't the point. All of our subjects have been volunteers."

"So far," said Pavel. "There is talk of having overlay surgery rep-place the death penalty." That brought a commotion, which Pavel silenced after a few seconds. "It won't amount to an-nything for a couple of years, but the debate is coming. It will be one more th-thing tying overlay therapy to criminality in the p-public mind. With that attitude prevalent, our opport-tunity to do good will be severely restricted. W-we need some action to prevent that from c-crystallizing, something before the brewing debbate influences how people think."

He saw a stern look coming from Lucinda, but she said nothing. Urowsky spoke up, shaking his head. "If you are volunteering for surgery for reasons unrelated to its medical worth, I will not perform it. I would consider it unethical."

Pavel pounded the table with his fist. "You think I d-d-don't care how I t-talk, how I sound? God-d-d—" Kate gripped his hand. He went silent, though his jaw still twitched.

"I withdraw my comment," Urowsky said, "but Pavel, think about this. You've performed these surgeries. You are asking me to cut your skull open. That is never a frivolous matter. You also know about advances in transcranial magnetic stimulation. In a matter of a few years, five at the outside, we will be able to adjust individual neurons without breaking the scalp. You wouldn't lose time, and we wouldn't lose your work during your recovery. If you are patient, you can gain the benefits of our work with far less risk and inconvenience."

"So your concern is about me, Steven? You w-wouldn't be as reticent to operate on Ramesh, or Diane? You're certainly not as concerned about operating on convicts."

"Doctor Patrusky!" Kate gasped.

"Doctor," Lucinda echoed, "surely you can see the difference between the two."

Pavel fixed his eyes on Lucinda. "I certainly d-do. I want others to see it, too."

Urowsky sunk his chin onto his hand. "I am . . . hesitant to agree to this, Pavel."

"Then don't," Lucinda said. "Reluctance is the wrong mindset to take into the OR."

Pavel glared at her, knowing she had just won the debate as far as Urowsky was concerned. His fellow surgeon soon said as much. His "I'm sorry" at the end sounded sincere. It might have been, for all that mattered.

"So am I," Pavel said. "If this is the s-standing policy toward non-correctional use of the neural impression p-procedure, I will have to reex-xamine my participation in these studies." His chair rasped across the carpet, and he left the room without another word.

"You weren't completely forthcoming in that meeting." The progress bar on Lucinda's voice file inched forward. "You aren't trying to have the procedure before this death penalty debate brews up. You're trying to have it before it's used for drug rehabilitation. Either way, you're trying to score political points, and I don't like that."

THEY'RE BOTH SERIOUS CONCERNS, Pavel wrote back. THEY'LL BOTH AFFECT THE FUTURE OF OUR WORK. AND YOU WEREN'T THIS LOATH TO TOUCH POLITICAL MATTERS WHEN IT WAS A MATTER OF SAVING THE RESEARCH PROGRAM.

While he waited, his work dithered between the scans of a ruby-speed addict and the press release he was composing. If he was going to leave, he wanted to make the biggest impression he could with that definitive act.

Of course, any worthwhile media notice would bring follow-up stories. They would prefer interviews with him, right until they conducted them. To give them something else to use, he was compiling a list of colleagues at his university and others, and even some out-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

side the sciences, who could support him in whatever public dogfight ensued.

The reply icon flashed, and he clicked it. "Desperate people grasp at short-term solutions." For several seconds she said nothing. "California isn't the only state. Maybe we should have passed on our findings, and let some other jurisdiction be first. Making a partisan issue of this may have been worse in the long term than losing a couple of years and credit for ourselves."

A briefer pause came. "And nice try diverting me from my point. It's still odd that you didn't bring up the drug rehab angle: two lines of reasoning are better than one. Perhaps you were afraid your dispassionate, objective peers might not share your opinions. You might end up having to reevaluate them, and that's always uncomfortable. I know from experience."

Pavel sat for a few minutes, thinking through Lucinda's words. There was little point in answering her assertion. It was more rhetorical than Socratic, using debate to win rather than to learn. No, it was time to get to first principles.

I'VE FIGURED OUT WHAT YOUR OWN UNEXAMINED PREMISE IS. YOU STILL BELIEVE IN FREE WILL. LUCINDA, YOU'VE SPENT OVER A DECADE WORKING IN NEUROSCIENCE, LEARNING THE MECHANICS OF HOW BRAIN CHEMISTRY MAKES US THINK, FEEL, ACT. YOU'VE SEEN THE LESSON BEFORE YOUR EYES, BUT YOU HAVEN'T LEARNED IT, HAVEN'T UNDERSTOOD. THE BRAIN IS THE MIND: NO MORE, NO LESS. DUALISM IS DEAD, AND YOU'RE ONE OF THE PALLBEARERS.

He expected a long, shocked pause from Lucinda. The file signal that came a few moments later surprised him.

"How long have you been saving that up, Pavel? I knew you were a reductionist, but not such a rigid one. Sorry to disappoint you, but I decline to believe that all our actions can be factored down to chemical equations. Physicists used to have the same idea, but they found out the laws of physics weren't that straightforward. The fact that we can solve some mental problems doesn't mean we can solve all our actions."

Pavel had started pounding his keys the moment he heard the physics reference. GOOD LORD—PENROSE? THE QUANTUM MIND? IF THAT'S THE EXTENT OF YOUR REFUTATION, ADMIT DEFEAT NOW. IT WOULD BE MORE DIGNIFIED.

He took a breath. I WILL ADMIT THE ILLUSION OF FREE WILL IS A USEFUL SURVIVAL TOOL, BUT IT SERVES NOTHING TO LET IT BLIND YOU. THAT'S WHAT THOSE POLITICIANS HAVE DONE, THE MORALIZING FOSSILS. THEY'RE SO PREDICTABLE. YOU WONDER HOW I CAN FORECAST POLITICAL TWISTS AND TURNS. IT'S ALL PART OF RECOGNIZING AND ACCEPTING THE UNDERLYING DETERMINISTIC PATTERNS. MAYBE THAT WILL HELP CONVINCE YOU.

He got some work done while waiting for her reply. Just as he thought she might have resigned from the debate, it arrived. "I see. So you admit your talent isn't anything meaningful. I'm glad you cleared that up. Thanks."

Pavel had to run the file a second time before answering. THAT'S NOT WHAT I SAID AT ALL. I HAVE A GIFT THAT COMES FROM MY UNDERSTANDING OF THE REAL HUMAN NATURE.

"But it isn't your doing. It's the result of outside influences causing a series of reactions in your neuronal chemistry, along pathways potentiated by years of environmental stimulus. You can't respond any other way; you don't have the will to do so. Of course, you were bound to think otherwise—and I was bound to argue the contrary just now."

VERY CLEVER, LUCINDA. OH, WAIT, I CAN'T CREDIT YOU WITH CLEVERNESS. YOU'RE JUST A MACHINE RUNNING ITS COURSE. I KEEP FORGETTING THAT. SORRY.

Lucinda's irony sank into gloom. "Don't you see the meaninglessness that imposes on every human action? If you have two hypotheses, why would you pick that one?"

BECAUSE IT FITS THE FACTS. NO REAL SCIENTIST CAN DO OTHERWISE.

He channeled the rush of confident energy that gave him into putting the finishing touches on his press release. He expected no answer to that crushing

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

shot. Again, he was wrong.

"Don't blame me for not being a real scientist. I'm only obeying my chemical equations. Then again, you're only obeying yours by accusing—oh, forget it. Infinite recursion gives me headaches."

Her persistent sarcasm irked him, and he let it show. I KNEW YOU WERE GOING TO SAY THAT, he wrote back.

He was about to close out the ruby-speed file some minutes later when the door creaked open. It was Lucinda. "I guess you have all the answers," she said. "From philosophy through state politics, and down to office politics, too." She lifted a finger. "So if you're that good at gauging human interactions, you'll have no trouble guessing what I'm going to do next."

Pavel began to speak, hoping his tongue wouldn't undermine him, but Lucinda was already leaving. His instinct to pursue got no farther than a twitch of his legs. He was tired of the argument, as tired as she had looked. He'd deal with whatever her plans were later.

It was late the next day when Doctor Urowsky admitted himself to Pavel's office. He stood gravely, a step inside the doorway, and needed prompting to speak. "I have . . . reconsidered my decision, Doctor Patrusky. If you wish to undergo the . . . corrective procedure you discussed, I will perform it."

Pavel let his mouth hang. He almost asked why Urowsky had reconsidered, but realized with a second start that he knew why.

"Understand, there will be limits on my work. I refuse to intervene in cerebellar function, even if it is part of your speech impediment. We have dealt too little in that area. Of course, if you are willing to wait some months or a year for a battery of animal tests—"

"I'd r-r-rather operate sooner," Pavel said. "C-cerebral impression may suffice. The less interf-ference that produces results, the b-better."

Their conversation went further into technical matters, letting Pavel forget his mystification for a while.

Pavel spent much of the next few days inside the MEG scanner. Most of the rest of the time he spent plotting excitatory pathways, and auditing control scans taken from volunteers. One of those patterns would be mapped onto his own neurons, rewriting a piece of his brain.

He did not ask Lucinda why she had changed Urowsky's mind. He was ready to ask once, during a post-scan review in the control chamber, but Lucinda forestalled him with her own inquiry.

"Since Doctor Urowsky will be operating already, might you think it advisable to have him do some . . . extra work?"

He rolled a jaundiced look her way. "Don't make jokes. This is a serious matter."

"It isn't a joke. I thought—there are some, er, slight peculiarities in the prefrontal cortex, related to the serotonin-producing cells. Here, I'll highlight them."

The lines she traced on her magnetoencephalograph showed up on his. He watched for a second, puzzled, until he made the connection. He snapped off his screen.

"That's beneath you, Doctor," he spat out. "Snooping into irrelevant c-c-corners of my brain, t-treating natural v-variations as s-something—" Anger left his tongue flailing, unable to push out the next word.

"Fine." She reset her screen. "I won't concern myself with it any further. Just don't conceal it from Doctor Urowsky to spite me. If you can remedy two problems at once—"

Pavel pushed off his chair so hard it nearly fell. He turned at the doorway, burning through Lucinda with his eyes. "Your insinuation is despicable." He stalked out, relishing those four perfect, unmarred words.

He shut his office door behind him, called up some leftover work, and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

wound up staring at it. He began questioning his reaction. Lucinda's inquiry could have been innocent, couldn't it? No, he decided, impossible. She was enjoying the moment, the notion that she was scoring in their great debate.

Still, how could there be an effect she would see? He had only used Ecstasy five or six times, back in college. A friend had promised him it would alleviate his stuttering, and under its euphoric influence, it seemed he was right.

It was a fantasy, though, born of synthetic confidence. His research revealed that, and hard questions to people he knew confirmed it. He abandoned the drug and its illusions. In retrospect, that moment of scientific honesty with himself might have set him on his career path.

He had felt occasional cravings, but he attributed them to chronic frustration with his stutter, an irrational yearning for the comfort of self-delusion. He refused to be irrational—but the yen refused to die altogether. Could that short, failed experiment long ago still have a physical presence within him? Presence and influence?

Pavel had a bitter laugh at himself. No, he hadn't found the scourge of original sin, the root of moral weakness or base criminality that some people imagined existed. At worst, he had found cause and effect, another stone in the foundation of chemical mechanistics. To anyone who knew pharmacology, it was no surprise. And maybe it really was just coincidence.

He wouldn't have Doctor Urowsky work on it. If word ever got out, it would be more ammunition for the guilt-peddlers. Besides, the planned overlay sites extended a little into the pre-frontal cortex. Maybe the right neuron would get zapped. No, that didn't matter. Erase the impediment, and you erased the desires on which that faint appetite fed.

Of course, that assumed the surgery worked. He forced his attention back onto the scans of his supplementary motor areas. There were a couple of days left to prepare—and then he'd see.

Pavel's first thought on coming to was that he really felt like his head had been sawed open. His hand went halfway to his temple, and stopped. He did not want to feel that. He would never be able to forget it if he did.

He let the residual clutches of anesthesia fall away over a couple of hours without exerting himself. He did eat a light dinner, greeting the orderly with a wordless smile. Eventually, he was ready.

The bag was there at his bedside. He pulled out the slim poetry volume at the top, opened it to a bookmark, and after a moment's nerving, opened his mouth.

He was stumbling by the last lines, but out of excitement. He had read three pages almost perfectly. His nervous slips of the tongue at the end were slips only, not the triggers to those maddening seizures of mind and flesh.

Pavel dove back into the book, finishing most of it. He wasn't perfect: He still hitched sometimes on "s" and "th" sounds, but that was the last remnant of his stutter. Drowsiness was all that kept him from going on.

He started again right after breakfast, and carried through until lunch without a rest. It was while eating that it struck him how strongly he was concentrating. Typically it took far more effort to stay focused on work—any work—and he suspected he knew why things had changed.

It took two tries to have the orderly fetch him the right neurobiology text, and it ended up being on paper rather than pocket-comp. Still, it confirmed his hypothesis. Urowsky had worked on his upper auditory cortex, an area connected not just to stuttering, but to attention deficits.

Nobody had ever diagnosed him with ADD, but in retrospect he was not that surprised. Neither was the link in the au-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ditory cortex a shock. The area integrated external stimuli, on one hand assisting concentration, on the other giving him proper feedback on his voice as he spoke. The work to cure one malady had fortuitously alleviated the other, unrecognized problem.

Pavel ended up filling the blank back pages of three novels with notes and speculations. When he was wheeled into the lab the next day, he made certain the team had those pages at hand as they scanned his auditory cortex. Otherwise, the tests merely confirmed for them what he already knew.

It was only after returning to the university hospital that he realized he had forgotten to ask Lucinda that hanging question. Probably for the best: they had never been alone.

He kept at his training for another long day, potentiating pathways for unimpeded speech, swamping the old, faulty connections. Finally, though, his surge of self-diagnostic energy waned. He asked the staff for a computer, or at least a television, so he could get connected to the world again.

They gave him a laptop. He spent a couple of hours absorbing news, until one item brought him to a cold stop. He traced every link and got all the background he could find, but that only increased the chill.

He sent e-mail to Lucinda, asking her to come immediately. It was the only thing he could think of to do.

"The legislators caught wind of it almost right away," Lucinda said. "They reached an impressive consensus: none of them liked it."

Pavel nodded, saying nothing. His friend, Doctor Hammond at UCLA, had told a local assemblyman about the operation, thinking Pavel would want it known. He mistakenly thought the publicity campaign was still on, that this was a political act.

Pavel wasn't going to say anything about his knowledge right now.

"Some of them condemned us for putting an elective procedure ahead of government-sponsored ones," Lucinda continued. "Others said we had no right asking for expansion of the drug test pool if we were willing to experiment on our own staff. Speaker Norris said it showed our racial bias, putting a white establishment figure ahead of the 'correctionally oppressed.'" She sighed. "Then there were some saying that volunteering for wiping proved you have a flawed personality."

Pavel's face began to burn. "I didn't read that online."

"The comments came directly to us, not to the media."

The media will hear about them, Pavel vowed.

"We're starting an accelerated course of surgeries on our inmate volunteers. The first one is tomorrow. We think that'll mollify enough of the legislature to rebuild our political support."

Pavel wrinkled his brow, with a twinge of scar pain, then nodded. "I have to agree. Do the drug cases now, and fast. The stutterers . . ." Lucinda bit her lip with concern, but he was just pausing. "They'll have to wait. I'll join Doctor Urowsky as soon as possible, of course. It's about time I got out of this bed."

"You don't—" Lucinda stopped before she said something futile.

Pavel looked up at her. "Is this what you intended to set in motion, Lucinda? To force us to work with the inmates alone; to keep the punitive taint of our work alive? Did you—did you really see connections that I didn't?"

Lucinda's face turned desolate. "No. I didn't think it through that way. I would never have wanted to bring this much trouble onto our program, and it definitely wasn't about knocking you down a peg. I wanted . . ."

She had to turn away for a moment, but she composed herself and met his eye. "I wanted to see you remade. Not just in your speech, but . . . stuttering is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

such a frustrating disability. Frustrations breed resentments; they bend our characters in ways we might not realize, that may not always show. We end up knotted, contorted.

"That's the way it was with me and Keith ten years ago. Eventually I cut the knot: I divorced him. I was trying to cut the knot again. It—it didn't seem like meddling to give you what you wanted."

That was what stopped the tongue-lashing he was ready to deliver. All her presumptions, her arrogance, suddenly seemed ludicrous. What was the point? Was she trying to instill the value of free will in him, with an act that treated his brain as a malfunctioning machine? Was she trying to reform what didn't need reforming, what he was glad to be, glad to believe?

He strained . . . then fell back with a dark chuckle. Now, now of all times, he did not know what to say. ■

(EDITOR'S NOTE: "Persistent Patterns" is part of the same history as "First Impressions" [May, 2002].)

IN TIMES TO COME

Much of human history has been a matter of ethnic conflicts and animosities, and many people have fervently wished a way could be found to lay them to rest. But would that really be a final solution to the underlying problem, or would our descendants find—or invent—new hatreds to replace the old? Catherine Asaro suggests an intriguing, if disturbing, answer in our April cover story, "Walk in Silence." Set in the same Ruby Dynasty universe as her previous *Analog* tales, it's naturally set against a rich and colorful background, making for a highly dramatic cover by George Krauter.

A year ago Robert Zubrin had a science fact article here called "Galactic Society," outlining a rationale for believing life and technological civilizations are common in the Galaxy and speculating on how they might interact. Next month Ben Bova offers a quite different view of the same subject, suggesting that such civilizations may be quite rare—perhaps so rare that the late Isaac Asimov's vision of a Galaxy dominated solely by humans was quite accurate. Which, if either, is right? Read both, and judge for yourself. . . .

Our April issue will also present fiction by F. Gwynplaine MacIntyre, Kyle Kirkland, and Mary Soon Lee—and, of course, Part Three of Rajnar Vajra's *Shootout at the Nokai Corral*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A STROLL THROUGH THE LYMAN-ALPHA FOREST

As the author of these columns describing cutting-edge physics and astronomy, I get quite a few letters and e-mail from readers who are more interested in "over-the-edge physics and astronomy." One recurring theme is various alternatives to the standard model of Big Bang cosmology. Perhaps the universe is not expanding; it's just that light "gets tired" on its path from far away and loses some of its energy. Perhaps quasars are closer than we think, particularly since some of them appear to be linked to closer galaxies. Perhaps relativity is wrong, and it's the speed of light that is different in different parts of the universe or changing with time. Perhaps quasars are the tailpipes of nearby alien spaceships, and they have such large red shifts because we only see them when they are moving away from us. And so on . . .

In this column, I want to discuss the Lyman-alpha forest, a characteristic of distant quasars that has become a standard tool of astrophysics and that provides convincing evidence that the cosmological red shift is real and the quasars are as far away as their red shifts would imply. We'll start by considering a bit of atomic physics.

Hydrogen is the simplest atom provided by nature. It has a single electron in orbit around a single proton, which forms the nucleus of the hydrogen atom and contains most of the mass. Because of the laws of quantum physics, the electron cannot have just any old orbit around the proton. Instead, it must have an orbit such that a certain number of wavelengths of the electron's wave function fit precisely into the circumference of the orbit. The number of such wavelengths is called the "principal quantum number" **n** of the electron's orbit. The size of the orbit is dictated by the value of N, with **n=1** for the smallest allowed orbit, and **n=2, 3, 4** . . . or higher orbits of increasing radii.

The negatively charged electron is strongly attracted to the positively charged proton, so that the closer they are together, the stronger the force between them and the more tightly the electron is "bound" in the atom. An electron in the innermost **n=1** orbit is bound with an energy of 13.6 electron volts (or eV). Here, an electron volt is the energy required to move an object with an electron charge through a potential of one volt. The higher orbits are bound with energy $\mathbf{E_n=(13.6\ eV)/n^2}$, so the **n=2** orbit has a binding energy of $\mathbf{E_2=(13.6\ eV)/4 = 3.4\ eV}$.

When an electron jumps from one atomic orbit to a more tightly bound orbit, it emits a photon of light that contains the energy difference of the orbits. Therefore, when an electron jumps from the **n=2** orbit to the **n=1** orbit, the transition makes a photon with an energy of 10.2 eV and a wavelength of 1216 angstrom units (1 Å = 10^{-10} meters). The reader should remember that the shorter the wavelength, the more energetic the photons, and that visible light falls in the wavelength region between 7,000 Å (red) and 4,000 Å (violet). Ultraviolet is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

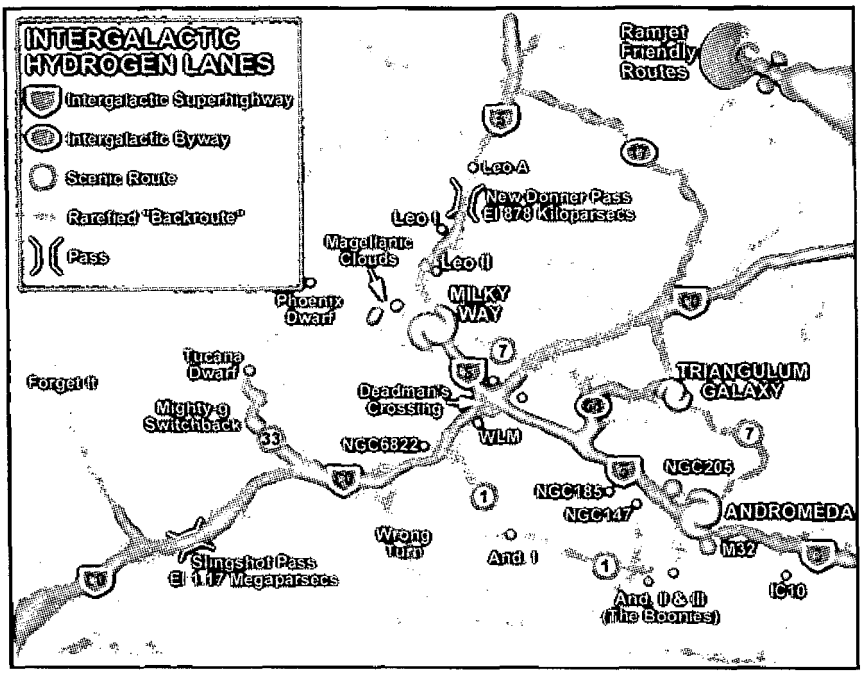


Illustration by Wolf Read

any light with a wavelength smaller than 4,000 Å.

The ultraviolet light accompanying an electron jump from the **n=2** to the **n=1** orbit is called "Lyman-alpha" radiation, because it is the longest wavelength member of a series of photons (or spectroscopic "lines") corresponding to jumps ending in the **n=1** orbit. The Lyman series was first discovered in 1906 by Harvard physicist Theodore Lyman (1874-1954), who was studying the ultraviolet spectrum of electrically excited hydrogen gas. Lyman had to do his work using a vacuum chamber, because all of the light in the Lyman series is in the far-ultraviolet region and is strongly absorbed by air.

In atomic physics, the interaction of photons with atoms is a two-way street. When an electron jumps to a smaller, more tightly bound orbit, a photon is generated. Conversely, if a photon of the right energy arrives at the atom, it can be absorbed by causing the electron to jump to a larger orbit. In particular, if a broad spectrum of ultraviolet light passes through a cloud of interstellar hydrogen, the wavelengths corresponding to the Lyman series will be selectively absorbed, making holes or "absorption lines" in the ultraviolet spectrum.

Now let's consider the situation for light from a quasar that is observed in an Earth-based telescope. Quasars are somewhat mysterious objects that populate the early universe. They are very bright and very far away. Because a quasar is very distant, because of the expansion of the universe it will be receding from the Earth at a sizable fraction of the speed of light. For this reason, the light it produces is Doppler-shifted (i.e., red-shifted) to longer wavelengths. For example, the wavelength of light from quasar Q1422+2309, one of the most distant quasars so far discovered, is lengthened by a factor of 4.62 because it is receding from the Earth at 97.63% of the velocity of light. Therefore, its Ly-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

man-alpha photons were emitted as far ultraviolet light with a wavelength of 1216 Å, but the same photons are detected in an Earth-based telescope as green light with a wavelength of 5618 Å. The observed spectrum from such a quasar will contain a peak from the Lyman-alpha emission at this wavelength, and that peak will be superimposed on a broad spectrum of ultraviolet light from the quasar that is produced by other processes.

The light reaching the Earth from the quasar to must pass through many million light-years of intergalactic space, which will inevitably contain some concentration of neutral hydrogen. Astronomers have learned that this hydrogen is not distributed uniformly along the path. Rather, it is tightly clumped into threads and filaments, alternating between high and low concentrations of hydrogen along the line-of-sight path. And because the universe is expanding, each clump of hydrogen on this path is moving away from the Earth at a different velocity, somewhere between the quasar velocity (0.9763 c) and zero, depending on the distance.

The broad spectrum of ultraviolet radiation of the quasar, which is at smaller wavelengths than the Lyman-alpha line, will be absorbed by the concentrations of hydrogen. There is a succession of Lyman-alpha absorption lines (or holes in the spectrum) at many wavelengths that are shorter than the quasar's Lyman-alpha peak. In distant quasars there are hundreds of such absorption lines, which is the basis for calling this region of the quasar spectrum the "Lyman-alpha forest." The long-wavelength side of the Lyman-alpha peak is smooth and relatively structureless, while the short wavelength side, the location of the Forest, is highly structured by the irregular comb of absorption lines.

The remarkable structure of the Lyman-alpha forest has a number of implications and uses. First, it provides a clear demonstration that the light from quasars has been Doppler-actually shifted to the long wavelength at which it is detected on Earth, since in the Lyman-alpha forest, we can observe all of the intermediate wavelengths that it had during the course of its passage. This lays to rest the hypothesis that the large quasar red shift might have been due to a gravitational or some other mechanism.

Further, the strengths of the individual absorption lines of the Forest provide a map of the density of neutral hydrogen all along the path from a quasar to Earth. This map tells an interesting story. Before the Lyman-alpha forest was discovered, astronomers believed that intergalactic hydrogen was distributed relatively uniformly through the universe. It was suggested that a careful measurement of the suppression of light on the short-wavelength side of the Lyman-alpha peak would provide a measure of the density of this diffuse hydrogen cloud. As it turns out, there is no evidence for a diffuse hydrogen cloud. Instead, the hydrogen in the universe is organized into a complex filamentary structure, with the hydrogen density changing by factors of 1,000 to 1,000,000 between a filament and its surroundings.

The structure of these filaments is related to the gravitational clumping of matter and dark matter in the universe. Measurements can be compared with computer simulations of the evolution of the early universe after the Big Bang. Effectively, such models tell us about the dynamic evolution of matter and energy in the universe as it expand and as the matter "curdles" into filaments, clusters, galaxies, and stars under the influence of gravity.

There is good observational evidence that most of the matter in our universe is in the form of some mysterious particles of dark matter that cannot be atoms or molecules or stars or planets. There are several "dark matter candidate" particles, theoretical guesses for what dark

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

matter might be, and these can be divided into two categories: fast-moving "hot" dark matter (e.g., massive neutrinos and most light exotic particles) and slow-moving "cold" dark matter (e.g., heavy exotic particles, mini-black holes, wimps, and axions).

Model calculations of the filament structure of hydrogen revealed by the Lyman-alpha forest are very sensitive to the presence of hot dark matter. Because its fast particles tend to connect distant parts of the universe, hot dark matter has the effect of fuzzing out structures like the hydrogen filaments. The result is that only a small amount of hot dark matter is permitted, and this is much less that the amount needed to explain the observations. Therefore, the presence of the Lyman-alpha forest provides evidence that the dark matter present in our universe must be mainly of the cold variety.

The Lyman-alpha forest can also be used to probe another characteristic of the early universe, the density of normal matter that it contained. One can think of the universe in the first three minutes after the Big Bang as a pressure cooker in which light nuclei, particularly primordial deuterium, helium, and lithium, were synthesized. The problem is that these elements are also produced in stars, so it is difficult to obtain a "clean" sample of primordial elements that is uncontaminated by subsequent element-cooking in stars.

Atomic deuterium is a hydrogen atom with a heavy nucleus made of a neutron and proton bound together by the nuclear force. An effect of doubling the mass of the nucleus is to slightly shift the electron orbits of the atom to higher energies. Therefore, the absorption line for deuterium is slightly shifted from that of hydrogen in the Lyman-alpha forest. As a consequence, each absorption dip has a small "notch" where deuterium absorbs the light at a slightly different wavelength than does hydrogen. This makes it possible to obtain information on the deuterium-to-hydrogen ratio using each of the hundreds of absorption lines that make up the Forest. This technique has been used to give very accurate estimates of the density of normal matter in the early universe.

Okay, this is a science fiction magazine. Does the Lyman-alpha forest have any implications for SF stories? Perhaps.

I have written about axion ramjets (see my AV column in the February 1985 issue of *Analog*), and a number of works of SF, including those of Larry Niven and Poul Anderson, have been based on interstellar and even intergalactic travel using the Bussard ramjet, a spaceship engine that scoops up interstellar hydrogen and uses it as fusion fuel. The filaments of the Lyman-alpha forest represent rich veins of hydrogen (and axions, if they exist) that form large-scale "highways" between one galaxy and another. A ship that was fueled with such interstellar material would be well advised to follow the track of such a filament, even if it did not represent the shortest path to the destination.

Starship pilots be advised: *Stay in the darkest part of the Lyman-alpha forest!* ■

AV Columns Online: Electronic reprints of over 100 "The Alternate View" columns by John G. Cramer, previously published in *Analog*, are available online at: http://www.npl.washington.edu/av.

References:

The Lyman-alpha forest:

"Lyman-alpha systems and cosmology," J. Cohn, U. California at Berkeley, on the web at http://astron.berkeley.edu/~jcohn/lya.html .

"Quasars as lighthouses: The Lyman-alpha forest at high and low redshift," Bill Keel, U. Alabama, on the web at: http://www.astr.ua.edu/keel/agn/forest.html.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Special Feature

Unsafe at Any Speed

Another Serious Pedantic Essay by Mike Resnick

He's faster than a speeding bullet. He's able to leap tall buildings in a single bound. He can even exceed the speed of light when he feels like it.

So why does Superman find himself taking the bus to the scene of the crime more and more often?

The answer, of course, lies in the dynamics that allow him to fly. The man doesn't have an anti-gravity device, and he isn't a hollow-boned creature like a hawk that can simply ride the warm thermals until he sees a likely place to swoop down and confront a villain.

No, Superman "flies" the way normal men and women jump: by pushing off from the ground. Now, if you're an average, everyday kind of guy, that doesn't amount to much. Even if you're Michael Jordan, you're only soaring 44 inches above the ground for a maximum of 3.247 seconds. But if you're Superman, the force required to reach escape velocity—he doesn't limit himself to Metropolis, but frequently flies to other worlds—or the push needed to approximate light speeds for distant emergencies is sufficient to send the Earth careening out of orbit and into the Sun. When they sing "There'll be a hot time in the old town tonight" they won't be kidding.

But let's say that old Superdupe has friends with the combined brainpower of Doc Smith, John Campbell and Isaac Asimov to help him find a way around that. You know what? He's *still* going to take public or private transportation to the scene of the crime.

Consider the following:

—If he reaches 660 miles per hour velocity, he will create an endless series of sonic booms. The plate glass industry will love him, but the insurance companies will refuse to cover property in any area where he's likely to appear—and there is no question that the good citizens of Metropolis would rather do without Superman than without house insurance, especially when Luthor is on the loose with one of those neat Destructo rays he invented in the prison machine shop.

—Most of the time, crises requiring Superman's brand of powerful aid arise without warning. That means that he almost never files a flight plan, and that in

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

turn makes him a serious menace to aerial navigation. Even if the local police are delighted to see him come racing to their aid, you can bet that the Federal Aviation Authority will be less than thrilled and will fine him for each unauthorized flight.

—Greenpeace will march against him and picket him, as his tail draft is precisely the kind that neither the spotted owl nor the condor can overcome. At the very minimum, he will be forbidden to fly over the Pacific Northwest (and any other area, anywhere in the world, with endangered avian species).

—He won't fare much better in the Northeast, as the wake of his tail wind will dredge up almost all the garbage that Manhattan pays New Jersey to haul off that overcrowded, overconsuming island.

—He plays havoc with bird migration patterns, since current research shows their homing instincts are a mixture of visual cues, wind patterns, and magnetic fields, all of which he constantly disrupts.

—He screws up weather patterns, and even such a noted conservative scientist as Al Gore has concluded that he is responsible for El Niño.

—There is every likelihood that when he flies, he is a major cause of tornadoes, cyclones and hurricanes.

Then, of course, there are the unanswered questions, such as the legalities. Superman is a law-abiding citizen. So which name does he use on his passport—his true-blue 100% American name of Clark Kent, his unregistered nickname of Superman, or his alien name of Kal-El? (And if the latter, has he applied for citizenship?)

Does he require a visa every time he flies over another country's air space?

When a transcontinental or interstellar adventure is done, must he clear customs before he can return to his home in Metropolis?

Must he go through quarantine whenever he returns from another planet—or whenever he visits California from a neighboring state?

And let's consider some of the consequences of flying over other nations' air space—not just our enemies, but our friends too.

Can Great Britain's early warning system tell that he's just a man cruising at an altitude of 40,000 feet, approaching London at 3,500 miles per hour—or does it identify him as an incoming missile wrapped, for unknown reasons, in a red cape?

When Iraq's radar spots him, will Saddam Hussein assume that the United States has launched a nuclear attack and respond in kind—by which I mean, of course, will he launch a SCUD attack on Israel?

What about the countries that *can* respond in kind—those that are using the latest, most up-to-date American weapons systems, such as, say, the Chinese?

And while all this is going on, does the Hubble telescope lock onto him and spend days tracking him as a Close Solar Object, rather than concentrating on incoming asteroids, comets, and other Close And Potentially Dangerous Solar Objects?

But I think I've made my point. Superman, poor fellow, is a captive of his own abilities, and can only fly in formation with F-16 fighter jets during military air shows on selected national holidays.

He even has to watch his diet. Not to put too fine a point on it, but having super-strength does not mean that he has a super intestinal tract. Pardon my bluntness, but the mere act of breaking wind could send him thousands of miles off course, while severely affecting the Earth's rotation.

This would seem to limit him to ground travel—he is, after all, faster than a speeding bullet—but alas, even land travel is too fraught with danger for him to use his abilities:

—A speeding bullet travels well in excess of 500 miles per hour. The wear

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and tear on our nation's roads would run into billions of dollars every year.

—The wear and tear where Superman has run is nothing compared to the damage when he skids to a stop.

—About a tenth of a second after Superman stops, the 20 million (or so) insects caught up in his draft will stop too—mashed to an unsightly pulp on his back and cape.

—As pointed out, Superman is subject to our laws, and of course willingly obeys them. But even with the best will in the world, he cannot, when traveling in excess of 500 miles an hour, manage to stop at every light that turns red as he is approaching it. His traffic citations would be so numerous that he simply could not pay even a small percentage of them on a journalist's salary.

—Also, after three major speeding violations in a two-year period, drivers have to surrender their licenses. I am not aware that Superman has a running license. When considering alternative punishments, I think it highly unlikely that the authorities will remove his legs, and simply taking away his boots seems somehow ineffective.

The man's superlative gifts have proven to be counter-productive. Just as he must always pull his punches for fear of killing an opponent, just as he must never yield to his instinct to crush Lois Lane to him for fear of literally turning her into jelly, he cannot race to the scene of the crime at top speed, but must go in slow, moderate stages.

So the next time you're walking along the streets of Metropolis, and you hear someone say, "Look up in the sky!" followed by "It's a bird!" and then "It's a plane!", just keep walking.

The odds, alas, are thousands to one that one of those observers was right.■

Chat online
with your favorite authors!

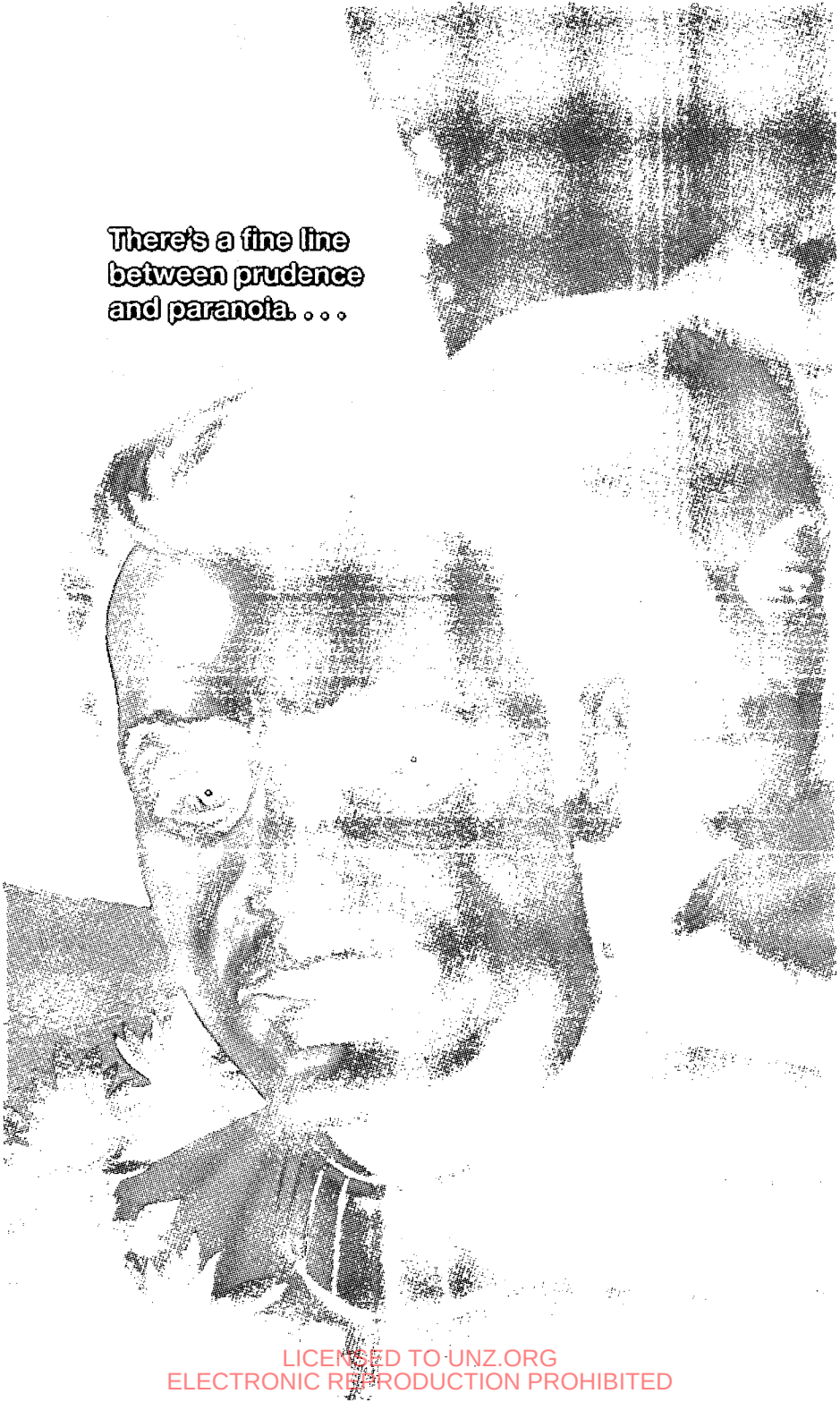
SF Perils of Pauline **January 28 @ 9:00 P.M. EST**
Robert J. Sawyer, Allen M. Steele, and Rajnar Vajra discuss adventures in serialization!

Me and My Valentine **February 11 @ 9:00 P.M. EST**
Find out what life is like in the writing households of Kevin J. Anderson and Rebecca Moesta, Geoffrey A. Landis and Mary Turzillo, and Gardner Dozois and Susan Casper.

The Watch **February 25 @ 9:00 P.M. EST**
Meet Eos author, Dennis Danvers, and talk about his new book.

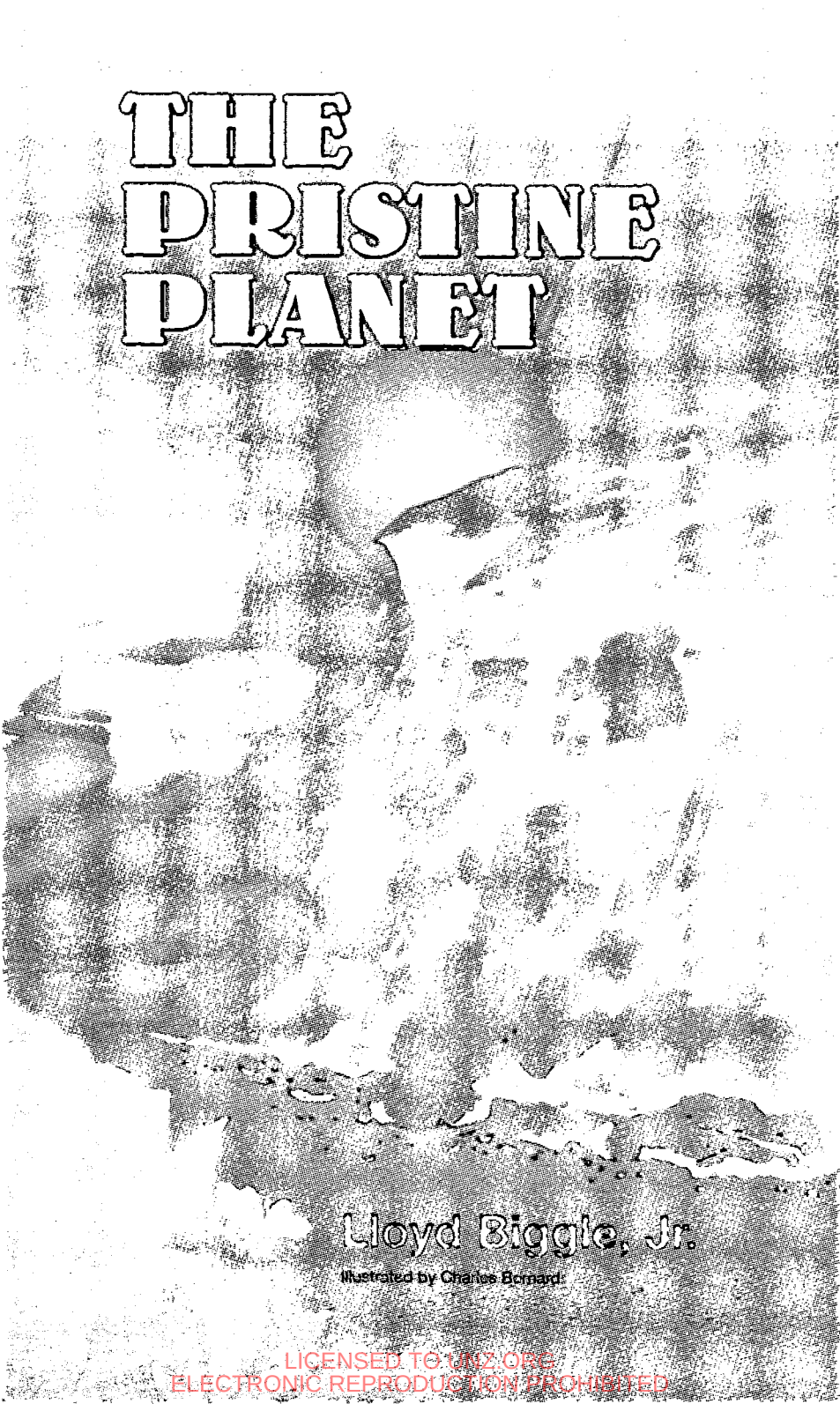
Go to **www.scifi.com/chat** or link to the chats via our home page (**www.analogsf.com**). Chats are held in conjunction with *Asimov's* and the Sci-fi Channel and are moderated by *Asimov's* editor, Gardner Dozois.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE PRISTINE PLANET



Lloyd Biggle, Jr.

Illustrated by Charles Bernard

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The sea below was a haunting green flecked with tossing, red-stained foam, and the ragged cliff dropped into it precipitously. Nial Gayne had made the perilous descent from the top of the cliff all the way to the massive boulders along its base where ponderous waves broke with regular crashes. He sat perched on one of the boulders with his feet just out of reach of the drenching, red-tinged spray and waited.

A short distance to the west, a sightseeing barge, with rows of gawking passengers seated under a canvas awning on brutally hard benches—Gayne, who had taken the trip the day before, knew how hard they were—cruised slowly along the shore. It approached Gayne, swinging in closer. The barge waited, its engines reversed to keep it stationary. Its passengers quickly became restless. They began to stomp their feet—as though the captain had the power to turn a natural phenomenon on and off at will.

Shouts and chatter drifting down from the cliff top indicated that Gayne's fellow hikers had finally reached their destination. They were looking into the alluring green depths and commenting sarcastically on the indolent barge passengers who had chosen to ride rather than hike. An occasional hoot was sent in the direction of that overly energetic idiot—Gayne—who hadn't been content to experience this unique event from the top of the cliff but had to climb down to it. They, too, waited.

Suddenly it began, and at first Gayne sensed rather than heard it. The deep, bass pulsation seemed to gently shake the cliff, though it probably was Gayne who was shaking. The volume increased; overtones formed a chord with pure, silvery, flute-like tones floating high above it, falsely promising a haunting melodic line that would forever remain shapeless. Gayne tightened his grip on the boulder, though he could not have said whether his reaction was psychological or physical.

"Worth it!" he murmured. "Definitely worth the effort!"

Some were calling it "Music of the Spheres," which was nonsense. There was nothing ethereal about it. It was firmly grounded in the pounding waves and the slap of spray.

The fluttering bass pulsation seemed to shake droplets of pure sound from the mass of overtones. Accidental gems of breath-taking harmony collided with piquant clashes of dissonance. Gayne hugged his knees and resisted the impulse to fling himself into the rolling waves of sound.

At that moment, the world collapsed. The cliffs folded into massive chunks of rock that poured into the sea where the boat had been bobbing so bravely. Screams came from plummeting hikers who had been abruptly dumped from their high perch. Somehow most of the debris missed Gayne, whose boulder was guarded by a protrusion just above him. A rock struck his arm and broke it; another crushed his leg against the boulder. He waited for the catastrophe to fold inward and finish him off, but it was content to sprinkle him with searing pebbles and chunks of rock.

Through it all, the organ-like pulsations continued, but the chord slowly altered to a grinding dissonance, and the pure, high, flute-like tones twisted into shrill, insolent whistles whose mockingly insulting squawks echoed from distant cliff tops.

Gayne suddenly remembered his communicator. With his functional arm he fished it from a pocket and found to his amazement that it was still working. He could summon help, and he did so.

Unfortunately, the only life left to be saved was his own.

In the hospital, he was a curiosity and a celebrity. Half the people there had already made the pilgrimage to the Symphonic Rocks; the other half had intended to the moment they were discharged—an

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

intention now forever frustrated. The rocks remained, but the wild shoreline was sadly altered. So were the grandly symphonic harmonics. They had been permanently distorted into painfully wrenching dissonances no one could tolerate for long; instead of sounding regularly for seven and a half minutes every hour and three quarters—a phenomenon scientists had been trying to explain right up to the moment when an explanation became unnecessary—it turned itself on and off in random blasts of noise as some whim of nature dictated.

The first day of Gayne's hospital stay, he had a visitor. Gayne had become feverish and touched with a mild delirium—something in the sea water had contaminated his lacerations—and was lying there in a daze wondering what effect the collapsed Symphonic Rocks were going to have on this world of Bylanoff's popularity as a vacation planet.

He became aware of an owlish face—with preposterously thick lens implants on the eyes, a beak-like nose, and no noticeable chin, resembling a well-known bird of prey of a remote planet whose name escaped him—peering down at him with curiosity. Only the feathers were lacking.

"Bit of a fever, I see," a strange voice remarked.

"A bit," the voice of his doctor agreed. "We'll have that cleared up in a jiffy. His arm has a routine break. It's the leg that worries us."

"Yes, indeed. I'll come back when he is better able to talk."

It was long afterward when Gayne thought to ask his doctor, "Who was that?"

"Your visitor? That was Doctor Fornley Loffner. He heads the Bylanoff Study Committee."

Gayne stirred himself and tried to sit up. "Study committee? Here? I thought there were no significant life forms to study. Isn't that why vacationing Interplanetary Relations Bureau personnel have the run of the place?"

"It's an interesting planet with no end of things for vacationers to do and see," the doctor murmured. "But there are always scientific committees. There is no world that scientists can't profitably study."

Gayne settled himself on the bed again. "I suppose he wants to know why the Symphonic Rocks collapsed."

"I suppose so. He may also want to know why you were the only survivor."

"How could I possibly know that? Whole sections of the cliff were dumped into the sea on either side of me. By sheer accident I chanced to be perched where an underlying rock structure miraculously protected me. I didn't know it was there until after the cliff collapsed. That isn't the sort of thing that can be explained."

"Even so, it will be of interest to him. There have been other major catastrophes, you know—enough to make the IPR Bureau consider closing the planet. Some of them were far worse than the one you were involved in. The Smoky Mountain avalanche of last winter, for example, killed more than two hundred skiers. The Winslow Reef accident, where a volcano considered long dormant suddenly erupted and wiped out an entire skin diving school—that killed more than a hundred and seventy. There has been a long list of such catastrophes. A mere hundred and twenty died in yours, but it was unique."

"Unique how?" Gayne demanded.

The doctor smiled. "Yours was the first one in which there was a survivor. In all of the others, everyone died. It's as though someone slipped up. The scientists, being scientists, naturally would like to know why." He grinned at Gayne. "No doubt they would also like to know whether to blame you or the universe."

Dr. Loffner returned two days later armed with photographs and recording equipment. Once he had introduced himself, fussily arranged his equipment on a table, and murmured what he prob-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ably intended as a conviviality, he came directly to the point.

"I understand that you visited the rocks the day before the catastrophe."

"Yes, I did," Gayne said, puzzled at the doctor's brusque attitude. He seemed about to pronounce Gayne guilty of something.

"Then you heard the music the day before the catastrophe as well as just before the catastrophe happened."

"Yes, I did."

Dr. Loffner beamed at him. "Excellent! Excellent! Now—reams of material have been written about the Symphonic Rocks and their wonderful sound effects. I want you to forget all that and give me your own impression of the sounds."

Gayne shrugged, which was painful. The doctors called his broken arm "routine," but it still hurt him, and his leg was far worse. There was no feeling at all in it.

An eruption of laughter and applause came from the ward next door. Someone was celebrating a birthday there. Dr. Loffner scowled. "Verminous tourists," he muttered. He spoke to an attendant, who hurried away, and a moment later the laughter ceased abruptly. Gayne had already decided he did not like Dr. Fornley Loffner. He was an easy man to dislike.

"You were trying to remember your impression of the sounds," Dr. Loffner reminded Gayne.

The mere attempt to recall the wonderful sounds that had abruptly turned into a collapsing nightmare was painful. He began to talk: the bass pulsations; the crystalline overtones that built powerful harmonic structures; the pure, searching, haunting tones of the flute; and finally the droplets of pure sound being shaken free from the mass of overtones to achieve spectacular beauties of harmony and dissonance.

Dr. Loffner sat nodding his head delightedly. "Splendid, splendid," he said, when Gayne had finished. "Now tell me—are you by chance related to Rogan Gayne?"

Gayne winced. "What difference does that make?"

"Perhaps an enormous difference. Please answer me."

"I've spent my life trying to keep it a secret," Gayne said bitterly. "My father was a widely-known crackpot engineer. His reputation drove me out of engineering."

"You should have been more patient. Rogan Gayne was a prophet far ahead of his time. He was convinced that every structure produces an aura of sound, and that aura should be planned as carefully as every other part of a structure. Recent developments indicate that he was right. Aural engineering is going to be the great career field fifty, seventy-five years from now. Tell me—did he extend his theory to include natural structures?"

"Natural and unnatural. Everything."

"Of course. If he were alive today, on Bylanoff, he would have a unique opportunity to reverse his reputation. As it is, you will have to do it for him. These wonderful things you heard at the Symphonic Rocks—do you realize that no one else heard all of them? As your father's son, you have an instinctive awareness of aural values. In fact, you have a predictive aural awareness of impending structural catastrophes. You didn't take that one safe position on the rocks by accident. It was the only place on the cliff face that sounded safe to you. Let's delve a little more carefully into this.

"Tell me—did you notice anything different about the music on the day of the catastrophe as compared with what you heard the day before?"

Gayne hesitated. The idea simply hadn't occurred to him.

"Take your time," Dr. Loffner suggested. "The answer could be important."

Gayne took his time. Then he began slowly, "After things began to fall apart—"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"No, no. *Before* things began to fall apart. Was the music in any way different from what you heard the day before?"

Gayne attempted to sit up. Dr. Loffner leaned forward, a nurse came rushing to the bedside, and the two of them restrained him.

"Just relax," the nurse said soothingly. "The doctor needs some information from you. Concentrate on answering his questions."

"There were high-pitched notes that sounded almost flute-like," Gayne said with uncertainty. "I didn't think about it at the time, but those high tones hadn't been there the day before."

"Excellent! Immediately after things fell apart, was that high flute tone still there?"

"It changed. Everything changed. The high tone stopped being a silvery flute and became hideous squawks."

The doctor was still beaming. "Excellent! Now I want you to listen to something."

Sound filled the room. It was the deep bass vibration of the Symphonic Rocks, and it shook Gayne's bed. Overtones formed a chord, which became louder and louder.

Suddenly he heard Dr. Loffner's voice attempting to soothe him: "Just relax. It's only a recording. Everything is all right." Not until then did Gayne realize that his body had become tense, and he was cringing as he waited for the world to fall apart again.

"Was the sound precisely like that the day before?" Dr. Loffner persisted.

Gayne nodded.

"And on the day everything fell apart, there was a high-pitched flute-like tone above the chord?"

"That's right. Also, some complicated effects with overtones that I don't remember hearing before."

"Thank you! You are a splendid witness! Now—one more thing." He handed Gayne a photographic enlargement. It was huge—probably a meter square. Squinting at it, Gayne forced his eyes to focus. It didn't look like anything at all to him.

"Recognize it?" the doctor asked.

Gayne shook his head.

"This is a close-up of the cliff where you were listening to the Symphonic Rocks. The boulder you were sitting on is just below this. It was taken a week before, but there shouldn't be any significant difference from what you saw when you climbed down there."

Gayne still didn't recognize it, but he dutifully nodded.

"Notice anything unusual?" Doctor Loffner persisted.

Gayne gave it his best effort, but it still didn't look like anything at all to him except—

Suddenly he uttered an exclamation and pointed. "Those—are they holes? They look as though someone has been drilling in a regular pattern."

"Excellent!" Doctor Loffner reclaimed his photograph. "Did you notice them the day of the catastrophe?"

Gayne shook his head. "It was just an ordinary cliff. How much are the holes enlarged in that photograph?"

Dr. Loffner beamed. "Good thinking. They are enormously enlarged, which is one reason why you didn't notice them. Another reason was that you weren't looking for them or expecting to see anything like that."

"What caused them?"

"We *think* something in the seawater etched them. Why those holes should have occurred at the precise place where a collapsing cliff would kill a lot of people—and nowhere else—is now the subject of a highly acrimonious debate. If the holes were deep enough, they could have caused the catastrophe or been one of its causes."

The doctor gathered up his equipment and turned to leave.

Gayne risked another question. "Doctor—what really produced the music?"

"Produced it?"

"There didn't seem to be anything

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

there that could be responsible for musical sounds, but the sounds—until the cliff fell—were spectacular. What produced them?"

Dr. Loffner put down his equipment and returned to his chair—an action that told Gayne more about him than the entire interview had up to that point. The doctor was a teacher. Ask him a serious, searching question, and you would get a serious, searching answer.

"We think there were underwater caverns deep beneath the cliffs," he said. "A regular number of times each day, wave action forced water into the caverns. The caverns narrowed as they became deeper, and the water compressed the air caught there and forced it out through variously sized vents that reached high up on the cliffs. Hence the different tones produced. When the cliff was about to collapse, the vents had already changed enough to add your high-pitched whistle to the tone. When the cliff fell, everything became altered. That much is easily understood. What we don't understand is an overwhelming 'why.' Why did the sea water drill those holes and weaken the cliff at precisely the place that attracted sightseers and nowhere else?"

The doctor gathered up his equipment a second time, gave him a nod and a smile, and departed.

"What was that all about?" Gayne asked the nurse.

"There have been natural catastrophes of one sort or another all over Bylanoff," the nurse said. "Dr. Loffner thinks the world is doing it on purpose. It is trying to get rid of us."

"He is claiming that the planet is a conscious organism of some kind?" Gayne asked doubtfully.

She nodded. "Dr. Loffner's Study Committee thinks we should leave before the world comes up with something that will wipe all of us out. He is trying to close the planet."

"Can he do that?"

"He seems to think he can. Mylo Darlan, who is the R&R Center supervisor, thinks he's a nitwit. No one knows how much political influence Dr. Loffner has, so we're all waiting with crossed fingers. It's a lovely Rest and Recuperation world, especially because IPR Bureau personnel have it all to themselves. There are no intelligent lifeforms whose lives and environment must be respected and protected. There are no lifeforms—period—except for fascinating flora and sea plants and even more fascinating insects that mostly tend the flowers. And what beautiful flowers they are! And we don't even have a mosquito to swat when we step outside. It's delightful for those enjoying R&R here, and it's heaven for we fortunate ones who are stationed here."

"It's comforting to know that the world didn't mean anything personal by breaking my arm and smashing my leg," Gayne said bitterly. "It just wanted me to leave."

"Something like that."

"And according to Doctor Loffner, it accomplished that by adding a flute tone to the chord produced by the Symphonic Rocks. If you permanent personnel have a direct line to the planet, you can tell it to let up. It's already ruined my vacation. I'll be long overdue for departure by the time they let me out of here."

The nurse walked away laughing, and Gayne settled back for some serious thinking, only to discover that he didn't know enough for even a frivolous thought.

His next visitor, who appeared on the following day, was Mylo Darlan himself. The world's Super was a jovial, friendly, middle-aged man who spent his days thinking up recreational pastimes for his clients—which he called "thrills." Those clients were, most of them, burned-out agents who had been risking their lives in an attempt to accomplish the IPR Bureau's mission of bringing all worlds in the sector into World Federation mem-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

bership. Darlan had been brilliantly successful in devising things that would relax their over-strained nerves and restore them to physical and mental health—right up to the point where, according to Dr. Loffner, the world of Bylanoff began killing Darlan's clients.

He said to Gayne, "You were in the middle of it. You saw everything there was to see, didn't you?"

"I wouldn't claim that," Gayne said cautiously. "There was such a lot to see, with everything collapsing. For the first few frenzied minutes, it looked as though the entire planet was falling apart. Then—as the shock wore off—I began experiencing hideous pain, especially in my leg. I'd say the world view, or the galactic view, or whatever it is you are looking for, completely escaped me until long after it was over. Frankly, I was mostly concerned about saving my neck, and there didn't seem to be anything I could do about that except lie there and take whatever was thrown at me."

"Mmm. I quite understand." The Supervisor looked and sounded as though he really did understand. No doubt Dr. Loffner had superior scientific knowledge, but the Supervisor knew much more than the doctor about being sympathetic. "Did you think at all about the passengers on the boat and the hikers who had been standing atop the cliff?"

"I thought about them throughout the whole ordeal," Gayne said. "I still do. I had friends among both groups. I know there wasn't anything I could have done to help them. Even if I'd been a clairvoyant and able to foresee the collapse in time to sound a warning, that wouldn't really have helped. Who would have believed me? I had trouble enough convincing people that something tragic had happened when I tried to call for help afterward."

"Mmm. Have you visited any of these other thrills we offer vacationing IPR agents?" He handed a slip of paper to Gayne.

Gayne read, "Marathon Ski Run. Jolly Mountain Water Slide. The Yellow Cliff Climb. The Red Mountain Run."

"These are only a few of the more dangerous," Darlan assured him.

Gayne had heard of all of them. The Marathon Ski Run was called that because it was 42.2 kilometers long, the same distance as the famous Marathon run in foot races going back to antiquity. It ranged through mountains and foothills, emerging in a plain beyond, and sloped steeply downward from beginning to end with ripples built in to add interest. It began with a man-made tower a hundred meters high to give the skiers extra momentum.

Its fame was already legendary among IPR personnel. There was no other place in the galaxy where one could enjoy an uninterrupted ski run that long.

The Jolly Mountain Water Slide was the giant water slide to end all water slides. It literally curved and looped its way down a mountainside for more than two thousand meters, roughly following a gouged out stream bed that guided the toboggan sleds under and above water. It was the trill of a lifetime, and there was said to be a twenty-day waiting list for those wanting to enjoy the mad dash down the dripping slide before they returned to their jobs and a more mundane environment.

The Yellow Cliff Climb was a sheer cliff face of yellow rock that climbers delighted in. It contained climbs of every difficulty, from those appealing to beginners to those calculated to try the skills of the most expert climbers.

The Red Mountain Run was really more of a walk, a dangerous route for experienced mountain climbers only.

Looking at the four items, it occurred to Gayne that all of them were hazardous enough without a crafty, conscious entity of a world suddenly introducing additional dangers. He said as much.

Supervisor Darlan nodded glumly. "Unfortunately, after years of braving

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the hazards every IPR Agent faces, those agents aren't content to come here and sit on a beach for six months. Perhaps for a week or two, but after that, they want to hone their physical skills and tone up their reflexes so they can survive when they return to their assigned planets. It is the dangerous recreations that are the most popular. Dr. Loffner has insisted that we ask a favor of you."

Gayne regarded him with surprise. He was unaccustomed to being asked favors by superiors.

"We can't make it an order because you are still physically incapacitated, and we wouldn't do that anyway with a hospitalized vacationer. The doctor has a theory that he may have mentioned to you, and he wants to test it. I would prefer to leave you undisturbed at this stage in your recovery, but Dr. Loffner has political influence. So, since you are technically a part of my command while you are vacationing here, I have been ordered to ask this of you. We don't want to inflict anything on you that you don't feel capable of doing, but we would appreciate it if you would take a look at these recreational attractions—" He gestured at the list he had handed to Gayne. "—and see if you notice anything particularly dangerous about them. In addition to the ordinary dangers one would expect from such an exercise, that is." He added apologetically, "Doctor Loffner has them at the head of his list of 'thrills' where the next catastrophe is likely to happen."

Gayne turned away in disgust. Dr. Loffner was determined to test that nonsense about his having a predictive aural awareness of impending structural catastrophes. "As long as this doesn't interfere with my going home," he murmured resignedly.

The Marathon Ski Run began on a barren, wind-swept mountain top. There was a comfortable lodge there, reached by a swaying gondola train from a lodge on a lower slope where a narrow gauge railway had its terminus. The mountain's tricky, unpredictable air currents were considered too dangerous for aircraft.

Both lodges were huge, rambling buildings, full of healthy, high-spirited skiers. Gayne, threading his way through the lounge of the lower lodge in a motorized wheelchair, felt right at home. The skiers regarded him as one more victim of a skiing accident, of which there were so many about that motorized chairs were a traffic hazard.

There was some difficulty about getting him into the gondola train for the ride to the higher slope, however. Accident victims might hang around the lower lodge for a time, enjoying the remainder of their vacations as well as they could with arms and legs immobilized, but there was no reason for them to ascend to the upper level, and the upper gondola had no access for invalids. Dr. Loffner insisted, however; in the end, Gayne was carried aboard by a crew of male nurses, and a folding wheelchair, unmotorized, was taken along for his use when he reached the top.

Thus it was that he found himself in the sweeping, punishing winds of the mountain top, listening to the shrill, whining sounds they produced as they twisted their way among the tower's taut support cables.

These were external sounds; but Gayne's father would have said the tower's internal vibrations made their own intrinsic contribution to its aura of sound. For example, the elevator's high pitched, straining purr as it lifted skiers to the top, and its lower-pitched hum as it returned to the bottom. Then there was a concomitant human aura furnished by the skiers themselves as they took the initial plunge at the top of the tower and streaked downward, gathering a momentum that would carry them to a slowing, coasting halt on the other side of mountains and foothills, forty-two kilometers—more or less—from the starting point. A really skillful skier could nurse his momentum for an addi-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tional kilometer or more; an inept one might not reach the Marathon marker.

The skiers' cries—of elation, triumph, or sheer terror as they dropped into the abyss that suddenly opened in front of them—certainly contributed to the aura of sound.

None of which helped Gayne understand why he was there. The whistling wind contributed the overwhelming ingredient of the tower's aura, and that, of course, would vary from day to day or hour to hour. In Gayne's room at the lodge, Dr. Loffner had played recordings for him made at the base of the tower at regular intervals during the past year. All Gayne had been able to conclude was that some days were windier than others.

But here he was, poised and ready to test his predictive awareness of impending aural catastrophes, sensing nothing at all.

His crew of robust young male nurses was waiting for orders. Gayne had no idea what Dr. Loffner had told them—that he was a scientific expert with the task of inspecting the tower, probably, because they carefully moved the chair exactly where he told them to.

The tower itself, once he put the nonsense about its aura of sound from his mind, was interesting enough, with a complicated spider web of steel bracing repeating itself on every level until, a hundred meters up, it had achieved total redundancy. His mind, trained to engineering, began playing with stress problems as he gaped upward at it. The legs would be set deeply in concrete, of course. He began to wonder whether those guy cables were really necessary—probably they provided an extra safety factor.

A word to his crew of nurses, and they flexed their muscles and managed to move his chair off the path and through the blown snow to one of the feet of the tower. Gayne stared at the dizzying height above him; then looked down at the point where the huge supports entered the concrete. The struts of the tower were tubular; the main members were enormous tubes.

He listened again to the whistling sounds that enveloped him. He could discern no difference whatsoever between what he was listing to now and what he had heard in his room at the lodge. The only conclusion he could sensibly arrive at was that Dr. Loffner was, indeed, a crackpot—as Gayne's father had been.

A sudden gust of wind far stronger than usual struck his chair, half-lifted it, and carried it against the leg of the tower. Struts, pipes, and cables screamed a howling protest; then the wind subsided, the screams diminished, and all was as it had been before—except Gayne himself, who would never be the same again.

When he opened his mouth to speak, he feared no sounds would emerge, or that he wouldn't know any words to say. He rasped, "Get Dr. Loffner!"

The nurses stared at him. Then one of them left at a run.

The doctor arrived at the fastest speed his rotund figure could manage. "What is it?"

"Get everyone out of the tower," Gayne said. "Get people off the mountain."

"What have you heard?"

"Heard, nonsense. I *saw* it. One of the tower's main supports is cracked. Corrosion, probably. When a really strong gust of wind hit it, the tower leaned just a little, and the edges of the crack separated. It was only visible for a fraction of a second. Then the wind let up, and the crack closed."

"Where?" Dr. Loffner asked.

Gayne indicated the place, and Dr. Loffner produced a marker and carefully circled it. Then his rotund figure achieved a totally improbable rate of speed as he dashed to the tower entrance. Gayne watched dazedly as skiers were turned away from the tower and herded back to the gondola train, and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the elevator began making trip after trip, fully loaded in its descent, empty on its return trip to the top.

Finally the report came: the tower was empty. The top of the mountain was almost cleared. Gayne, Dr. Loffner, and the nurses were waiting for the last trip of the gondola train. The ascent would not be a total waste for the skiers; there was a second starting point near the lower lodge. They still could have their Marathon run, but not with that steep drop from the top of the tower adding to their initial momentum.

A short time later, the chuffing narrow gauge railway train brought a load of engineers, who listened incredulously to Gayne's story.

"Your father would be proud of you," Dr. Loffner exulted. "On a busy day, there may be a thousand or more people in and around that tower. Its collapse would have set a new casualty record. Now let's see what you can hear at the Jolly Mountain Water Slide."

What Gayne heard was an enormous *Swoosh!* as a toboggan sled dropped from an upper level and disappeared into a cloud of spray. Then, after a suitable safety interval, came another *Swoosh!* And another. One *Swoosh* sounded exactly like another to Gayne.

It was a far more comfortable "thrill" to investigate than the Marathon Ski Run had been. Gayne had the same robust group of young male nurses looking after him. Now that his incredible observation about the Marathon Ski Tower had proven correct, he also had a group of apprehensive officials following him about. There was no chilling wind, and the spray, on a warm afternoon, actually felt good.

But he observed nothing at all that offered more danger than could be expected from such a plunge down a mountain. He persisted long after he was willing to give up simply because all of those expert observers were expecting something of him.

Finally he confessed to Dr. Loffner that Jolly Mountain was a washout. The doctor nodded. "Can't expect to win 'em all. We'll come back and have another look later."

As they turned away, Gayne swept the slope with one last, searching glance. "What's that rock doing up there?" he asked.

"What rock?" Dr. Loffner wanted to know.

Half an hour later, the Jolly Mountain Water Slide had been closed indefinitely. Its engineers theorized that a nighttime rock slide had left a gigantic boulder poised for another plunge that easily could have taken everything in its path, crushing tobogganists and spectators all the way to the observers' galleries at the bottom.

After that, Gayne wasn't needed. The officials found the hazard at the Yellow Cliffs themselves—cracks some distance from the face of the rock that threatened landslides at any moment. A list of hazards closed the Red Mountain Run. Other, supposedly less thrilling thrills were found to be equally dangerous, and before Gayne had been pronounced medically fit to go home, the world of Bylanoff had been officially labeled too hazardous for humans. It was closed, and the IPR establishment there was in the process of being reduced to Dr. Loffner's Study Committee, which would remain until its work was completed.

Gayne, because of the seriousness of his leg damage, was held in the hospital until the last evacuation ships were ready. When he was carried aboard one, he found to his amusement that he had VIP Status—no doubt Dr. Loffner had arranged it—and was able to watch the departure from the posh first class passenger lounge.

Mylo Darlan, ex-supervisor of Bylanoff, slipped into the chair beside him.

"Leaving?" Gayne asked him.

Darlan nodded. "I'm curious about something," he said. "Do you mind

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

talking?"

"Not at all," Gayne said. "What do you want to talk about?"

"I've been wondering whether you were part of the conspiracy or just an innocent bystander."

"Color me innocent," Gayne said with a grin. "Probably it took me longer to catch on than it did you."

"But you did catch on," Darlan said. "Tell me what you concluded."

"Dr. Loffner hated the vacationing tourists," Gayne said. "They were 'verminous' trash to him, cluttering up the place and interfering with his precious study group's enjoyment of a beautiful world. He wanted to get rid of them. He seized on some natural catastrophes that had cost a lot of lives and speculated as to how he could use them to make the world seem too dangerous for humans. Then the Symphonic Rocks collapsed, and he spun that into an incredible theory of a malignant world. I really would like to know if the top IPR brass bought that silliness."

"They certainly bought the line about the number of deaths that had occurred in association with the world's 'thrills'—those figures couldn't be denied. They said, 'We want this stopped,' so they closed the planet. Dr. Loffner's oddball theory may have given them a pseudoscientific excuse if they felt they needed one. Your discoveries, and your 'predictive awareness of impending catastrophes' gave them a much better reason."

"Certainly the dangers were real enough," Gayne remarked defensively. "I never was more than a beginning engineer, and if I could find those things, it meant that your people were inexcusably careless in their inspections. This beautiful world lulled them into thinking they were vacationers, too, and they stopped doing their jobs. Experienced engineers could have found everything I did and more—and they did, once my discoveries set them to looking. Of course the bit about my having a predictive awareness of impending catastrophes was nonsense."

"Then why did Dr. Loffner take you around to inspect the thrills?"

"I don't think he expected me to actually find anything. He was just using me to dramatize his nutty theory, and it was sheer accident that I chanced to look at the leg of the Marathon Ski Run tower at just the right moment and that I noticed that boulder at the water slide. I suspect that his spectacular photo of holes etched in the Symphonic Rocks was taken somewhere else and he drilled the holes himself. Probably all of the world's problems could have been solved by frequent and careful inspections."

Darlan sighed. "We were doing good work here until Dr. Loffner started expounding that nonsense about the planet resenting our presence and arranging catastrophes to drive us away."

"Face it—Dr. Loffner is a hoax. Why didn't you fight back?"

"I couldn't because there already had been several serious accidents, and if I had belittled his theory, one more might have brought me instant demotion. And then you made your dramatic appearance at an unfortunate moment by surviving the Symphonic Rocks catastrophe. When Dr. Loffner started talking about your 'predictive awareness'—"

"But remember—I wasn't responsible for any of that. I was a pawn that happened to be available when Dr. Loffner wanted to make a play. When the Symphonic Rocks collapsed, he remembered my father's work and recognized my name. One of my father's crackpot theories chanced to match what he was trying to do, and I fit in perfectly. Probably he was both pleased and shocked when I actually found something the theory could use. But now all of that is history. The IPR Bureau has ignominiously fled, leaving Bylanoff to its own devices."

"Not quite," Darlan pointed out. "But now Dr. Loffner's precious Study Committee will have the world to itself."

"Will it?" Gayne asked with a grin.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"What if the world develops a resentment for Dr. Loffner? He is a very easy man to dislike. I can imagine the beautiful world of Bylanoff resenting his presence here."

"So can I," Darlan said. "Unfortunately, the universe is too impartial to inflict that order of justice."

They continued to watch the boarding of the last of the IPR Bureau vacationers—the pestilential IPR Bureau vacationers according to Dr. Loffner and perhaps according to Bylanoff as well. On worlds with a human population, IPR Agents on leave were disdainfully called "leavers." Perhaps Bylanoff had its own term for them.

Darlan uttered an exclamation. "Is it possible? It is! Dr. Loffner is leaving, too! Look, he's got his whole study group here, with all their luggage and equipment. Their stuff is being loaded now."

"Imagine that," Gayne murmured.

"What in the world could have happened? Only two days ago he told me they would remain until their study was completed. Suddenly he packs everything and leaves." He gave Gayne a hard look. "Something tells me you're behind this."

"Me and my predictive awareness," Gayne murmured. "And I do it all from a wheel chair. Be realistic."

"You don't like Dr. Loffner—"

"Like everyone else on the planet," Gayne murmured.

"—and you have an unusual imagination. What have you done?"

"*I* haven't done anything," Gayne said. "Remember, I'm confined to a wheel chair. But I may have slipped a hint or two to some of the engineers, who absolutely hate Dr. Loffner for the way he showed them up and got half of them demoted. They thought my hints sounded like jolly good fun."

"So what did they do?"

Gayne hesitated. "Oh, well—it's too late now to change anything. Dr. Loffner's stuff is already loaded. They sneaked over to his office and laboratory in the dead of night and planted a few explosive charges where they would do the most good without making much noise. It took Dr. Loffner most of the next day before he noticed the damage. When he did, he thought it looked as though the ground was shifting below his buildings, and when he called in some engineers, of course they agreed with him. Shouldn't have happened, ground perfectly secure there, the world seemed to be taking aim at Dr. Loffner and all his works. After all the nonsense about the malevolent planet, his mind had gotten so wrapped up in his theory that when he suddenly encountered what appeared to be a genuine example—directed at him—it scared the socks off him. He decided to leave, too. He began to pack immediately."

Darlan shook Gayne's hand. "Thank you. The idea of Dr. Loffner being left here to have this beautiful world all to himself—but thank you. I feel much better, now."

He retired to his stateroom.

A few moments later the ship lifted, and Gayne watched the beautiful world of Bylanoff fade to an insignificant orb. Gone were the spectacular sunsets and the molten images of two iridescent moons reflected in still waters, the magnificent flowers, the hauntingly beautiful wooded mountains. Any music the Symphonic Rocks produced to accompany their departure probably sounded like laughter.■

(EDITOR'S NOTE: Previous stories of the Interplanetary Relations Bureau have included "Perchance to Dream" [September 2002] and "The King Who Wasn't" [September 2001].)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Atoms That I Breathe Today

The atoms that I breathe today
were breathed a hundred million years ago
by saurian kings.

When giants curled in their eggs,
cold beneath the warming sun,
particles of life long rock
nestled in the womb of worlds
and quickened into energy
in the trembling intimacy of fire.

When worlds were done and compounds breathed,
and life was embryonic in its mud,
these same atoms in my red life
were locked in the alien broth of seas
boiling, in hotter days,
with liquid lust for all the worlds,
to put an end to entropy.

When first the world came slobbering out of space,
swirling bastard of the hermaphrodite sun,
novaed stars its sire,
all my elemental life
that now is vital in my flesh
was dark in that dark star.

The atoms that I breathe today,
that fuse into the blood and warm my cold life,
will be breathed again, should we allow,
by this dead era's child.

—G. Solov

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SHOOTOUT at the NOKAI CORRAL

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Part Two of Four

Rajnar Vajra

Illustration by Kelly Freas

Hardly anyone is a villain
in his own eyes—but how do you judge one
who conceals his motives?

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Our story so far . . .

Time: Several centuries hence.

Place: The small town of Sunstone, Red Clay County, Tenderfoot Continent, on an Earthlike world named Paladin.

Background: Paladin is one of the twelve theme planets colonized to find an answer to a terrible despair infecting terrestrial humanity. Each theme planet has an individualized artificial society. Paladin's culture stems from an idealized American Old West, with the "cowboy" role filled by people of the usual mixed blood (Chinese being the most common denominator). "Indians" are groups of Jews and Hindus deemed by social physicists to have the proper cultural valence.

Paladin's secondary experiment is to accelerate biological sciences by forbidding all other advanced technologies. On Paladin, electrical devices are illegal except in one city: Buildem.

Earth agents, proctors, armed with condescending attitudes backed up by devastating weapons, roam Paladin to monitor events. The colonists loathe them.

On this theme planet, law enforcement is managed by licensed, private, law agencies. Most leading marshals are "slingers": genetically augmented humans. Unfortunately, most leading criminals are also slingers. . . .

Story: A stranger appears in Sunstone, riding a genetically tweaked designer zebra. After being dismayed by the townspeople's fearful attitude, he introduces himself to the local sheriff, Chou Larker, as Marshal John "Silver" Davies, one of Tornado Carter's Dust Devils, a highly respected agency.

Chou is impressed at meeting Davies, renowned, even among top slingers, for sharp-shooting accuracy. John explains that he has come to evaluate the town's need, to see if Sunstone's predicament justifies taking up the Dust Devils' limited time.

Chou Larker is enraged until the slinger explains *why* the Dust Devils lack time: for years, an unknown outlaw gang has been ambushing marshals. These attacks have so drastically pared the agencies that those still extant have to pull triple duty to fill the need while hiding the situation from the proctors. If Earth learns the truth, the authorities will undoubtedly declare martial law and Paladin's citizens will lose personal freedom.

Chou states that the infamous Dirty Jake, widely known as Paladin's only hit-and-run bandit, has finally hit and stayed put. Jake's Mudslingers, a crew of murderers and rapists, have set up camp near Sunstone and the outlaws are terrifying the populace and draining local resources.

Worse, Jake has procured a powerful illegal off-planet weapon: a portable ion-plasma cannon. This "blast-torch" acts as a hellish combination flamethrower and lightning-generator.

John is flabbergasted by Chou's next statement: Shining Wing Krishna, chief of the Paladin Anasazi (the local Indian tribe), claims to have recognized Dirty Jake when they met. Despite intense cosmetic surgery, Shining Wing positively identified the outlaw as William Caine, the legendary marshal.

John doubts this because Caine was supposedly killed in an ambush years earlier, and the man was the ultimate straight shooter in every sense. Still, Chou's confidence in the chief's perceptiveness leaves John shaken.

After accepting the assignment, John is alarmed when a gaunt slinger, eight feet tall, suddenly rides into town. John recognizes him as Hangman, an executioner who lost his job recently, when his agency was ambushed.

John and Chou walk past a blond woman whom John admired earlier. The sheriff says her name is Dana Rider and she's the owner of the Sunstone Saloon and Grill. And single.

The sheriff insists that John bunk with

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

his family. John agrees. They park John's belongings at Chou's nearby residence, then head toward the saloon for food and a close examination of burn marks from Jake's cannon.

The marks are chilling and John notices another disturbing item: on a wall map of Tenderfoot Continent, someone has stabbed a fork into the coastal town of Strake, long since wiped out in a tsunami. The wall is modified rock-hard maple, so the stabber had to be incredibly strong.

John meets several Paladin Anasazi, including Chief Shining Wing. Shining Wing is as perceptive as Chou had claimed, and John cautions himself to say little. John hasn't been entirely truthful with the townspeople and doesn't want his secrets exposed prematurely.

Hangman enters the saloon and he and John talk briefly. To John's surprise, Hangman requests a job, but not as an executioner. Despite misgivings, the marshal promises to consider the proposal. Hangman also warns of a man sitting in a third-floor hotel room across the street, aiming a rifle down at the saloon entrance, muttering threats.

Chou Larker, when apprised of this, explains that the rifleman is the town drunk, Coby Patterson, who has hated slingers ever since a slinger's carnivorous steed opted for one of Coby's arms in lieu of lunch. Chou declares that the man is harmless because he never actually shoots his rifle—and besides, the townspeople have given him bad ammo.

The sheriff introduces John to Dana Rider and the two hit it off. John learns that Dana, a music lover, commissioned a pipe company to produce a cornet. This prototype, she claims, makes sounds so atrocious that she had to stop practicing because it was upsetting the local steeds.

She states that Dirty Jake was responsible for the stuck fork.

After a pleasant evening with Chou's family, John falls asleep in a guest room. He awakens with Chou shaking him. When he sees how terribly the sheriff's face is injured, he comes fully awake. Apparently, two slinger outlaws were threatening Dana at her saloon and when Chou tried to interfere, one slinger slapped him. Badly hurt and knowing he was outclassed, he ran to get John.

John dashes from the house toward town. Before reaching the saloon, he muddies his face and enters the saloon acting intoxicated. Neither outlaw has John's top slinger abilities. Dismissing the drunk as a mere nuisance, the Mudslingers are taken by surprise when he pulls them off their barstools and drags them both outside.

The gangsters try to draw their guns. John shoots all four guns out of the outlaws' holsters. The Mudslingers are cowed, but the arrival of a small man riding a horse-sized wolverine puts fear into John's own heart. The newcomer is Malachite Preston, the Greenstone Kid, and he knows what John has been hiding. If Malachite speaks a certain word in Dirty Jake's ear, and Jake really is William Caine, John is as good as dead.

To further complicate matters, bullets rain down from the hotel. Evidently, Coby's ammo wasn't as bad as advertised. Luckily, the man's aim is poor. After hearing Coby's story, John is determined to stop the drunk without harming him, yet John can't afford to let Malachite leave Sunstone. John improvises a plan to distract both Malachite and Coby. After commanding Malachite to let him handle the situation, John runs across the street, intending to run straight up the wall of the building, to the third floor. Only one problem: he hasn't practiced this maneuver for twenty years.

Chapter 8

John hadn't lost his timing; his vertical run went perfectly. At his destination, he hesitated. For a split-second, he stood straight

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

out from the wall to get reoriented.

Then, letting himself fall headfirst and trusting his holsters to hold his guns, John used the dregs of his forward momentum to gain a handhold on the top inner-edge of the window-frame. He immediately pulled himself through the open window, flipped and spun, landing softly on his feet, ready to leap in any direction.

His basic plan was to snatch the rifle away from Patterson, make sure the drunk had no other weapons, and return to the street before it dawned on Preston that Dirty Jake's protection was miles away. John intended to arrest Preston—the outlaw had certainly committed enough crimes—then throw the man in the nearest jail cell until he could be put on trial. Assuming, of course, Red Clay County actually had a jail. The Greenstone Kid wouldn't argue; they both knew who was the faster slinger.

But the scene in the hotel room shattered John's plans. Coby Patterson was there, but he wasn't holding any firearm and he wasn't alone. He was dangling in midair, suspended by a huge pale hand clamped over the top of his head. Hangman used his free arm to throw John a casual salute.

The rifle was resting on an unmade bed with filthy sheets; its thick, steel barrel had been crushed and twisted. The room smelled of atrocious booze, long-unwashed socks, and fear.

"As you can see, Marshal," Hangman said quietly, "I have my uses. What would you like me to do with this specimen?"

Nothing about this situation was ideal, but John put the best face on it he could. "Thanks for your help, Hangman. I haven't forgotten your offer, but there are one or two . . . obstacles we need to discuss before I'll have an answer. Right now, however, I'd appreciate it if you'd just put that fellow down and let me deal with him. Alone."

The wintry eyes glanced at John's pistols and the long head nodded sadly as if Hangman could see where this was leading. The deep grooves around his mouth deepened further, but he said nothing as he gently returned Patterson to the floor. He nodded respectfully to the marshal and walked to the open doorway. The door had been torn from its hinges and was lying on the floor, raised by the knob beneath. As Hangman stepped over it, he turned his head and looked back with an almost wistful expression on his cadaverous face.

"Call me 'Kelly,'" the tall slinger murmured.

"Kelly?"

"That's my real name. Kelly Walsh. Never cared much for that other one and it's worn out its welcome."

"All right. Thanks again . . . Kelly."

With this, Hangman left and John was free to face the plain terror in Coby Patterson's face.

"Please don't shoot me!" the drunk quavered hopelessly.

"I'm not here to shoot you."

Patterson didn't look reassured. "No? Then what—what *are* you going to do to me?"

John urgently needed to capture Preston, yet this crisis had scraped the hostility off Patterson's face, revealing such naked misery that John was shaken. He now understood the implications of Patterson's condition: this man might be the *only* person on Paladin doomed to a lifetime with only one arm.

On other worlds, his injury might be less devastating. On other worlds, a person suffering such a loss has normal human courage, resilience, and just plain stubbornness to help them adjust. Yet they also know that many other people are making similar adjustments. Coby Patterson was alone, and John couldn't walk away from need that radiated from the drunk like a beacon.

"I'm here," the marshal said slowly, feeling his way and speaking from the heart, "to tell you how sorry I am about what happened to your arm."

"What? What?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Sheriff Larker told me about it. He said that some slinger actually laughed when you—"

"That's right! I was *dying* and all I could hear was that asshole laughing! Slingers used to be my *heroes*; I always wanted to—" Patterson's voice choked off.

"No wonder you hate us so much." John's sincerity seemed to penetrate Patterson's anguish. He wiped his streaming eyes and stared uncertainly at the marshal's face.

"You're trying to help me. Why? A minute ago, I was *shooting* at you."

"If I let you go, will you shoot at me again?"

"I won't. I promise." Patterson glanced over at his ruined weapon. "My God, look what that bastard did to my rifle! And he nearly crushed my head in! Oh, shit. What difference does it make? Guess I don't have much use for either one."

John tried for an encouraging smile. "Take my advice: forget the rifle, but keep your head."

"You're not going to punish me?"

"There's already enough punishment in this world to go around a dozen times. Tell you what. You get sober and stay sober, and there's a job waiting for you if you're interested. The sheriff says you're good with animals. But—I don't think we've been properly introduced."

When John, on impulse, revealed his name, Coby Patterson stared for a moment. Then he slowly held out his only hand for a shake.

When John hurried out the hotel's main door and looked around, he wasn't pleased with himself. Preston, along with Rabbit-ears and Pretty-face, was gone. He didn't care about the lesser goons. In fact, he wanted them to escape; but the Greenstone Kid's absence spelled disaster.

"What happened, Johnny?" Dana asked as he approached the saloon. "That was Coby Patterson up there, wasn't it?"

"Still is."

"Oh? He's all right then? Are *you* all right?"

John tried to appear unworried. "We're both fine, although I'm afraid I've just made a mistake that has nothing to do with Coby. Got my priorities crooked. But I don't think my foolishness will catch up to me until tomorrow morning."

"What do you mean?"

"Tell you later. Right now let's get the sheriff to a doctor."

Now that the immediate crisis was over, Larker was barely able to stand. Blood on the swollen side of his face had dried and crusted, giving him a grotesque, unbalanced appearance that matched the way he was swaying from side to side. The left side of his jacket was stiff with dried blood.

Dana gasped, aware of the lawman's condition for the first time—she'd been concentrating elsewhere. She hurried to put a supporting arm under Larker's shoulders and John ran over to lend assistance from the other side. He could, of course, have easily picked the man up and carried him, but somehow teamwork felt more appropriate.

John's arm crisscrossed over Dana's like a promise. "Which way?"

"Our infirmary is next to the bakery," she said, tugging them in the right direction. "Barbara—Dr. Gray usually sleeps there at night, but if she's gone, a nurse will be on duty. I've had a little medical training myself."

"Likewise," John admitted. "But I think a real physician should get a look at this."

Larker was groggy. He slowly turned his head to give the marshal a twisted smile. It took a moment for John to realize the expression was intended to convey gratitude. "Thank you, John," he croaked, using the marshal's first name for the first time.

"You're welcome, Chou. What, exactly, are you thanking me for?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"For not letting them shoot Coby. He's a good kid underneath. I hope you didn't have to hurt him much?"

"I didn't hurt him at all."

Larker shook his head, gingerly, as if he couldn't trust his ears. "What did you—what happened up there?"

"Mostly I apologized."

John expected the sheriff to request an explanation, but Larker surprised him. "Bless you, Davies! You're turning out to be a . . . hard man to overestimate!"

John appreciated the appreciation, but ugly visions of the near future were haunting his imagination. And he couldn't hope to run away; Houston had tremendous endurance and other remarkable abilities, but he wasn't any faster than a full-blooded zebra. God only knew what speed-demons the Mudslingers were riding.

The irony was that John's few hours of sleep had cleared away some mental dust; he could now see a possible means of survival, perhaps even victory, with ingredients right at hand. But the plan wasn't pretty, and it would take too long to set up without at least three more allies with slinger strength. Heavy lifting and serious digging would be involved. Hangman might help, but John wasn't sure he wanted to owe the former executioner that much. Besides, Hangman alone wasn't enough. . . .

A few yards past River Boulevard, the trio left the sidewalk to angle across Main Street. Without warning, John's nose and ears snatched him away from his depressing thoughts. People and animals were hidden in the fog, not too far ahead. A gentle if chilly breeze blowing from the south damped the smells and sounds, but John's senses were certain.

"If I'm not mistaken," he said with thinly veiled excitement, "my Dust Devils have arrived sooner than expected. I've no idea how they got here so fast, but they're here."

Dana and Larker looked around. "Where?" Dana asked.

"Dead ahead. Let's just keep moving."

The news seemed to revive the sheriff somewhat; his good eye seemed more alert. "Thought your headquarters was southwest of us. Why would they enter town from the north?"

"They probably wanted to be downwind of town. I imagine Henri Jacques was using that nose of his to sniff me out."

"A slinger bloodhound?"

"Henri is that and more. The four people you're about to meet are the most . . . well, see for yourselves."

The trio stepped through a thick fog-curtain and stopped. Less than twenty feet away, mounted on some particularly impressive animals, were four slingers. Two of them seemed nearly as large as their massive steeds.

John's pleasure was tempered with uneasiness; like it or not, he was going to have to tell the sheriff and a woman he was growing more fond of by the minute the full truth.

"Ah, Johnny!" chirped a tiny and beautiful woman who was straddling a unique, short-necked giraffe. "How it lifts my spirit to see you!"

"Always good to see you too, Lil. I'm delighted to see each of you. But what are you *doing* here? I just sent Blithe Spirit out this afternoon."

Lilly's exquisite, thoroughly Asian face crinkled in her version of a mysterious smile, but then her eyes drifted toward Larker and the smile was instantly replaced by a look of concern. "My husband said you were going to need help, Johnny. Perhaps he wasn't wrong."

John tilted his head far back to regard Lo Pan Li's immense, benevolent face. "He's never been more right, Lil. But as you've noticed, my friend is hurt. Let's get him to the local doctor and then I'll introduce everyone."

"Hold it!" the sheriff ordered, shrugging off John and Dana's support irritably. "I've been looking forward to this moment for a long, long time. We do introductions *now*; this hard head of mine

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

will keep for a few minutes longer."

"Are you sure?" asked Dana.

Larker was swaying again. "Damn sure."

John frowned. "All right. Like I always say, a person is their own best doctor—until they've been hit on the head. I'll make this snappy. Fellow Dust Devils, meet Dana Langhorn Rider and the sheriff that sent for us, Chou Larker."

The four slingers bowed slightly in their saddles.

"And, friends from Sunstone, these are the four finest slingers I know." The affection in John's voice touched and surprised Dana. If so much emotion could leak through the marshal's perpetual mask, what was he feeling underneath?

"Starting on my right, we have Henri Jacques." He pronounced Henri "Onree." "Poet, veterinarian, my oldest friend, and surely the second strongest man on the planet."

Dana stared up at Jacques. He was at least as tall as Hangman, but considerably wider. His parents, she decided, must have been enamored of an old story from Earth's America, well known on Paladin: the legend of John Henry.

Jacques looked like a man who could win a contest against a steam drill with one hand tied behind his back. His skin was the warm sienna of enhanced ebony and his kinky black hair had an offset streak of white running from front to back. Despite the cool air, he wore a leather vest with no shirt underneath and his dark, hairless body was all slabs and striations of thick muscle. He had narrow black eyes showing a hint of China, and a small, wide nose with large nostrils. His expression wasn't unfriendly, just cool and wary, somewhat judicial. But whenever he looked at the marshal, his eyes gleamed.

Jacques was sitting atop a modified, barely miniaturized rhinoceros, whose naturally thick skin had been augmented into something resembling plate armor. In addition to three horns, the creature had tusks like a boar and a distinctly piggy face. Dana found the combination ugly.

"Next," John continued, "we have Joe Li. We call him 'Lo Pan,' which is Chinese for 'compass,' not only because he's such a round fellow, but also because he has an uncanny gift for knowing . . . where to point. You can see why Henri is only the second strongest man on Paladin."

That was manifestly true. If Hangman and Henri Jacques were giants, that word was insufficient for Lo Pan Li. He was almost a head taller than Jacques and astonishingly thicker. If half of that girth were fat, Lo Pan might not be able to stand up, let alone walk; he had to weigh twelve hundred pounds or more. But somehow, Dana knew that Lo Pan could *run*.

The giant's wide face had a flat, somewhat Tibetan aspect. But his dark, shoulder-length hair, unusually long for a slinger, held a Hispanic wave, while his small nose had a distinctly Semitic hook. He carried no weapons. His black eyes were of average size, but looked tiny in his huge head. He smiled warmly down at Dana as if she were an old, treasured friend. He was riding a modified *Loxodonta africana*, an African elephant scaled down to a mere eight feet at the shoulders and streamlined to a paltry three tons. The pachyderm was black and furry.

When Larker met the titan's eyes, he felt, even through a veil of pain, an instant rapport. Here's another soul, he thought, who rides on hunches. Only this fellow rides 'em bareback!

"Next to Lo Pan," John was saying, "is his wife, Lilly. Lil may well be the fastest slinger alive; she's certainly among the top three."

Lilly Li lowered her eyes. "Ah, Johnny! How you exaggerate my skills!" Her straight black hair was cropped as short as John's.

"Exaggerate? If we weren't in a rush, I'd ask you to do that switching trick of

ARCHIVED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

yours. Maybe later."

"*I'm* in no damn rush," Larker observed stubbornly. "Let's see that trick!"

Lilly looked at John, who shrugged unhappily. "Go ahead, Lil. Arguing will only waste more time."

"I hope you aren't expecting something impressive, Sheriff," she said. "Keep your eyes on my pistols."

Lilly's two guns were mismatched; unusual for a top slinger. On one side, she wore the standard law-officer's pistol: an improved reproduction of a Colt Peacemaker—modified for double-action so that squeezing the trigger automatically cocked the hammer. John used a similar weapon. But her other revolver was larger; its barrel protruded far past its holster.

She didn't appear to so much as twitch, but there came a soft click and suddenly the two weapons had switched places. Then, with another click, they were back where they started. Dana could only stare and blink.

Larker's jaw dropped and he was lucky that Paladin lacked flies: his mouth had evidently frozen open. He was far more aware than Dana that what he'd just seen verged on the impossible. It wasn't just a matter of raw speed. Some remarkable stretching had to have been involved. Maybe, he mused, Mrs. Li was supremely flexible; maybe she'd moved one gun behind her back while the other one moved in front. "*You're* the slinger they call 'Lightning Lil!'" he stated with sudden certainty.

The small woman bowed.

"I think Lil has made my point," John stated tersely. "And that at last . . . brings us to the gentleman on the tiger."

Both Dana and Chou had known who this slinger had to be, but he wasn't at all what either had expected. They'd been visualizing someone chiseled from granite or poured from molten steel, a person so energetic and palpably competent that he'd exude authority the way lanterns exude light.

Instead, the man on the enormous golden tiger radiated laziness, ease, and a dapper charm. His eyes were half-closed and sleepy; his mouth was faintly smiling, apparently at some private joke. His straight, dark brown hair was perfectly brushed. The cut and crispness of his dark, rather formal suit made the Greenstone Kid seem, in retrospect, like a sloppy dresser. He was an inch shorter than John, but his narrower build made him seem taller, more elegant.

Larker was swaying so much now that Dana put an arm around him again for support. He didn't object. "I take it," he said quietly, looking up into unreadable sleepy eyes, "you're Grand Marshal Carter?" The man said nothing, but his ambiguous smile widened a bit.

John shifted uncomfortably. "Sorry, Chou. And sorry, Dana. I'm afraid I haven't been completely forthcoming with either of you. My friend here *isn't* Carter; but he *is* the finest sharpshooter you'll ever meet and also the Dust Devil's chief engineer. Please say hello to Jonathon Morrow Davies."

Dana was stunned, but Larker nodded thoughtfully. "*You're* Silver Davies?"

The elegant slinger touched the edge of his dark hat with his forefinger in an ironic salute. "At your service." His voice was as smooth and polished as his pistols.

Larker turned back to the marshal. "Then you must be. . . ?"

"The biggest fool in town. You were right the very first time you laid eyes on me, Chou. My real name is also John, but the full version is John Jay Carter. In my agency, Davies is usually referred to as 'Dave.' As for me, when I was a kid, people started calling me 'Tornado,' maybe because I kept running around in circles and making messes. I hope you two can forgive me for not coming clean sooner."

Larker managed a lopsided smile, but Dana looked away, troubled. She wasn't upset about John's lies; she was sure he'd had his reasons and would eventually explain them. But while she could at

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

least fantasize about a continuing relationship with the legendary Silver Davies, what kind of future could she hope for with the far more legendary Tornado Carter?

Chapter 9

Late as it was and tired as she was, Doctor Barbara Gray was awake, making detailed notes on her latest experiments with medicinal plant hybrids.

Using a gene splicing form of *GM coli*, she'd grafted potent carotene compounds and various flavonoids from an enhanced yam onto the Chinese tonic root, *huang chi* (astragulus). The combination, she'd calculated, would make a person's immune system sit up and sing.

She found such work soothing and satisfying, and made sure to do her research during hours when she wouldn't be interrupted. So, for more than one reason, the crowd of slingers at her infirmary door brought an angry frown to her face. In her mind, slingers—whether law officers or outlaws—were people who trusted violence, and violence was always pregnant with twins: pain and death. Doctor Gray despised pain and regarded death as her personal adversary.

When she saw Chou Larker's injuries, she swallowed all complaints and ordered Dana and John, Larker's ambulatory flying buttresses, to help the sheriff inside to the nearest cot. To the doctor's relief, the other marshals stayed outside. She was sure that one slinger, a real behemoth, wouldn't be able to fit through her narrow doorway.

John was impressed with the infirmary's equipment, which included a propane autoclave and a steam-driven ultracentrifuge, amenities seldom seen in a small town doctor's office.

"How did this happen, Chou?" the doctor snapped, while closely examining Larker's skull and eyes, then checking his pulse.

"Don't feel like going into it," Larker muttered.

Gray sniffed disapprovingly while lighting a smokeless, dripless candle. She inserted this into a cylindrical device with internal mirrors and glass lenses and used this candle-powered ophthalmoscope to first peer into Larker's pupils, and then to test their responses to light. Finally, she gazed into his ears before dowsing the flame.

"Where's Karen? She know about this?"

"Hell, no!" he snapped. "Don't you think she'd be here?"

"Alright, settle down. Close your eyes and stick your arms straight out to the sides. Touch your right index finger to your nose. Now the left. Hmmph. Not bad. How's your balance? Care to try standing on one foot?"

"Not really."

"Of course you wouldn't. The swelling has distorted the shape of your left ear canal. Also, you may have a small concussion. I need to keep an eye on you, but I'm not *too* concerned. I've always complained about your thick skull, but now I finally see an advantage. At the moment, I'm mainly wondering how much blood you've lost."

"I don't think—"

"The question was rhetorical. I trust your current opinions even less than usual. We'll clean you up, mix up a brew to help you feel better, and get some healall on you to bring down the swelling. Then we'll see."

"Thanks, Barbara," Larker said wearily. "You're a jewel, but that's just my *opinion*." He looked around the room blearily. "Lord Buddha! My head feels ready to explode! Hey, Doc? You and the marshal haven't officially met yet, have you?"

Gray turned her severe face and intense brown eyes towards John. "I know who you are. I overheard the sheriff earlier."

Larker held up a cautioning hand. "Seems the introductions in the saloon were a bit . . . premature. The marshal

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

here is actually Tornado Carter himself."

The doctor grimaced in exasperation. "I'm sure I wouldn't know the difference." Then, for the first time, she looked closely at John. She seemed to see something she hadn't expected and her face softened a bit. "Don't mind me, Marshal; it's been a long day. But I thank you for helping out. Chou is a damn fool, but he's the only sheriff we've got."

"I'm just here to help," John offered carefully.

"Glad to hear it," she growled, walking to the sink, scrubbing her hands, and filling a basin with hot water. "In that case, get over here and wash up like I did. Use the yellow soap and don't forget to wash between your fingers. No—don't touch that towel! Your hands will have to air-dry. Meanwhile, grab one of these sponges.

"Dana! Why the hell are you just standing around, eyeing us like some damn proctor? Wash up! First step, deputy nurses, is to get all the blood off. And without compounding the injury!"

With Dana's permission, the Dust Devils used her saloon for a war council. The large room seemed cramped with both Lo Pan and Henri Jacques in it. Because it was her place and because she couldn't bear to be separated from John, Dana made a full pot of strong Paladin coffee and joined the marshals around her largest dining table, meant to comfortably seat twelve. The two giant slingers took up the lion's share of an entire side.

While she'd been busy, Carter filled his staff in on much of what he'd learned since he'd come to Sunstone. He'd talked about Dirty Jake's recent activities and introduced the unpleasant subject of ion-cannons without going into details and without mentioning the name William Caine. Even the consistently beatific Lo Pan had a faint suggestion of frown lines between his eyebrows by the time coffee was served.

Against everyone's wishes but his own, Sheriff Larker was there, bandages and all; and because she was more concerned about his condition than she'd let on, Barbara Gray had insisted on coming too. She refused to sit at the war table and was sipping her usual black brew in her usual spot at the bar.

Tornado Carter had positioned himself at the table's head where he could see everyone and still observe the doorway. For some time, he considered his allies and friends who, one by one, fell silent and gazed back at him expectantly. A sense of anticipation, faintly electric, filled the room. In Dana's eyes, John abruptly seemed stronger, more dynamic and commanding.

John didn't feel stronger. Perhaps it was because he was so short on sleep, but a wad of emotion thickened painfully in his throat. He had to keep blinking to head off tears. What was wrong with him? In a crisis, a leader had to at least *act* tough.

But every one of these people, he understood with fearful clarity, was irreplaceably precious. And, thanks to his inexcusable stupidity, they were about to be deluged with Mudslingers. It was going to take a miracle to keep them from drowning.

In the troubled sanctuary of his heart, he made an impossible promise that he would somehow produce that miracle. He'd already lost too many people he loved.

John Jay Carter, he told himself sternly, you are in dire need of vocational counseling. You are obviously in the wrong line of work.

But everyone was waiting. . . .

"I've made a major blunder," he acknowledged quietly, aiming these first words mostly at his staff. "A bit earlier this evening, I had a run-in with Malachite Preston. You all remember Malachite? He sure remembered me. These days, he's working for Dirty Jake."

"Let me guess," Davies drawled patronizingly. "Knowing you, you didn't do the smart thing and shoot the little

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

weasel."

John wasn't offended. "You're right as usual, Dave. But what's worse is that I let Preston slip away." An uneasy murmur spread among the Dust Devils.

"Sorry to butt in," Dana said, "but what's so terrible about that?"

"Everything. He'll tell his boss that I'm in town. That would be bad enough, prematurely letting Jake know he's got me for an opponent. But it gets a lot worse. Listen up, folks! I don't want what I'm about to say to leave this room. This Dirty Jake character—and I'm taking Chief Krishna's word on this—is really someone you all know about: William Caine."

Everyone in the saloon except for Dr. Gray and Chou Larker started talking at once. John held up a hand for silence.

"Some of you," he said dryly, "were just kids when Caine was in his heyday, but I can see he hasn't been forgotten."

"I don't understand, Johnny!" Lilly Li demanded, speaking for most of the group. "Wasn't Caine assassinated long ago?"

"That's what everybody thought."

Dana looked troubled. "But I still don't see—"

"Caine was a truly great man, Dana, and something of a . . . super-slinger. I don't know what he's up to now, but I guarantee it's nothing petty. And he's never let *anything* bar his way before."

"Oh. And now he's warned that he's up against Tornado Carter?"

"Exactly. But what spells immediate trouble is that he knows me so well. I rode with his Shooters for two years. He knows how far I'll go to protect the county against his gang. And he'll figure that if he gives me enough time, I'll probably come up with a way to mess him up."

"A devious way," Davies added with a wolfish grin.

"Fair enough," John agreed. "I do prefer tactics to bullets." At the bar, Doctor Gray nodded grudging approval. "So Caine is going to show up in force very, very soon. He'll do his damnedest to kill or capture me before I have a chance to figure out his long-term goals and start blocking them."

"What makes you sure he *has* long-term goals?" Dana asked thoughtfully. "Besides going down in history as Paladin's worst outlaw?"

"Because I know *him*. When we have time, I'll share a few stories you won't believe. For now, I'm going to assume that Caine is working on something major and he won't tolerate interference."

"You know best. But when you say Caine is going to show up very soon—how soon?"

"He'll wait for enough light to read tracks accurately, just in case I try to sneak off in the night."

Dana lowered her eyes for a moment. "How would he know which tracks are yours?"

Jacques emitted a soft snort, but let John field the question.

"You haven't met my Houston yet, have you?"

"Your steed?"

"That's right. Houston's a zebra plus. Most slingers, myself included, stick with one kind of steed for life, Dana. In my case, it's always been zebras and Caine will remember that. But, as you know, zebras take special care, which makes them unpopular.

"And Caine will assume that I haven't been in Sunstone long or I would've, um, made my presence known. Since enhanced-zebra droppings are unique, all he has to do is find one recent zebra dropping anywhere on the trail between Sunstone and Wyatt to get Houston's scent. The trail's sheltered in places. Even with the rain, there are bound to be a few droppings in fair shape. If Caine has a decent tracker—hell, he *is* a decent tracker—Mudslingers will be able to follow the scent. . . ."

The sheriff cleared his throat. "Does Jake know your Dust Devils are here?"

John shrugged. "Good question. He's bound to know who my top people are

CORNELL UNIVERSITY LIBRARY HTTP://WWW.HATHITRUST.ORG/ACCESS_USE#PD-US-GOOGLE
GENERATED ON 2015-12-30 19:10 GMT / HTTP://HDL.HANDLE.NET/2027/UC1.B3243599
PUBLIC DOMAIN IN THE UNITED STATES, GOOGLE-DIGITIZED / HTTP://WWW.HATHITRUST.ORG/ACCESS_USE#PD-US-GOOGLE
ELECTRONIC REPRODUCTION PROHIBITED

and what they ride. He wouldn't have to backtrack me terribly far to find a collection of tracks that would tell him—hold on! How about it, Dave? I know you came into town from the north, but I've been assuming you did what I did and followed the Sedraw Trail into Red Clay County?"

"No, sir! Our good Compass wouldn't approve any idea that practical. And since we knew where you were headed, we selected the scenic route."

John whistled appreciatively. At this time of year, the Rio Amarillo wasn't fordable. And the land to either side of the Sedraw Trail was mud, fissures, and more mud. The Dust Devils must have scrambled through the rugged terrain between Mount McCurran and Mount Whitehead to reach Sunstone so quickly. This not only showed phenomenal respect for Lo Pan's instincts, but also how much they cared about John's safety.

"I thank you all," he said humbly. "You've had a rough trip. But it means that Jake may believe you're *not* here yet. After all, Malachite only saw me. With Dust Devils around, I would've had someone at my back."

Davies tilted his head inquiringly. "So we might have an advantage?"

"It's possible. With everyone's help, we may be able to do Caine more damage than he could imagine. What I have in mind is dangerous and, frankly, it's ugly. It's probably the worst idea I've ever had. Trouble is, I can't think of anything better."

The words "dangerous" and "ugly" seemed to hang in the air.

"Care to let us in on your plan?" Larker asked softly.

"Soon. I've got a few questions first."

"Such as?"

"Let's start with viewports."

"Viewports?" Larker looked uncertain for a moment, then pointed a wide thumb at the saloon's five thermoset plastic circles. "Those things?"

"Right."

"We call them 'hard-windows' around here. What about them?"

"Your town seems to have far more than its quota. For what I have in mind, I'll need at least seven. Eight or nine would be better."

"Well—I don't know. Don't think there's any loose ones left, but I'd have to check."

"Lord! You mean there might actually be *extras*? How in hell did you people wind up with so many? Never mind—tell me later. The ones in town seem to be mounted with external bolts rather than being built into the walls. Any reason we can't pop some out temporarily?"

"Getting them *out* would be easy. All we'd need is a good ladder and some big wrenches. Carrying hard-windows around is another matter. Don't be fooled by how they look, John—those things may be plastic, but they're *solid!* The three-foot diameter ones must weigh in at around four hundred pounds. They were originally installed by makeshift cranes."

"Yeah, I've heard the plastic is on the dense side."

"Absolutely," Silver Davies chimed in, his face earnest for once. "The old engineers designed 'em to be as radiation- and particle-proof as possible. And when you use antigravity to push a starship out of a planetary gravity-well, extra mass only helps."

John raised his palm to cut off further irrelevant comments. "We're all agreed: they're heavy. But I happen to be sitting near a fellow or two who could probably pick up a viewport with one hand and throw it from one end of Main Street to the other."

Larker studied the two immense slingers and nodded. "What else do you need to know?"

"The street lamps. What's fueling them?"

"Methane. There's a big composting reservoir at the end of town. Lord Kuan Yu knows we have no shortage of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

manure."

"Do you have a map of the gas lines? Or can you draw one?"

"You're planning on using natural gas for something?"

"No. I'm planning on *avoiding* using it, so I need to know where the lines are."

"You don't need any damn map. They're right under the sidewalks: one long pipe on each side of the street with feeder tubes to each lamp."

"Good enough, though it means we're going to have to bleed the lines. Next question," John turned toward their hostess. "I'd like to borrow most of the hardware on your ceiling, Dana, but I'm afraid you may not be getting it back in tip-top shape."

"Of course, Johnny! Ruin as many pipes and fittings as you like. I'll just hang everything directly from the ceiling."

"I really appreciate that. And I'm wondering about something else. Part of my plan isn't exactly vital, but it might help me sleep nights afterwards. When you told me about that bad cornet of yours, you said you had to stop practicing on it because the music upset the local animals. Were you exaggerating?"

"The noise that thing makes would probably scare *you*." Larker nodded confirmation. "And you'd be surprised how far the sound carries with me practicing in my office . . . with the door closed!"

"Perfect."

John gazed at Dana's face, trying to gauge her current feelings toward him. You're being ridiculous, he told himself; you've had exactly one conversation with this woman. Why do you imagine you're in some kind of *relationship* with her? Yet he yearned to talk to her privately for just a few minutes. . . .

"How long," he continued, "would it take for one of us non-musicians to learn how to make that noise?"

Dana's eyes narrowed. "Too long. If you want to frighten any steeds in the near future, you'll need someone who can squeak my cornet *reliably*. You'll need me."

John felt sick at the thought of taking such a risk, but pushed the final decision aside.

"We'll come back to that later. There are more things we're going to need: lightweight plastic tubing and some way to attach it to metal pipes, a plug for the end of the tubing, pipe-joint compound, shovels and pickaxes, a sturdy chair, and a big empty tank or vat. I suppose a big wooden box would do in a pinch. Let's see . . . some tools . . . a long and extremely strong rope or chain. Plenty of healall. I hope you've got a good supply, Doctor?"

At the bar, Barbara Gray frowned. "I do, but I thought you didn't believe in bullets, Marshal?"

"I'm trying to set things up to minimize violence, but there's no peaceful or safe way to handle Dirty Jake—none I can think of, anyway—and there's a chance something will go wrong." The doctor nodded reluctantly.

"We don't want to damage the town compost reservoir," John continued. "So there's one more thing we'll need: a large, moveable propane or methane tank, reasonably full. One we might have to sacrifice. Any ideas on that, Chou?"

"Take the tank behind my office; I only use it for the office fridge. I think I see your basic idea, John. But if I understand you right, and I'm kind of hoping I don't, how the hell do you expect to live through this?"

"You'll find out when we start putting it all together."

Tornado Carter took a deep breath and carefully laid out what he wanted done without explaining its purpose. But when he was finished, even Lo Pan was looking dubious.

"For *openers*, Johnny," Davies said quietly, "dawn is only a few hours away. We're going to need more bodies to get everything set up before sunrise."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"I'm planning on waking up some townspeople and asking them to help. Also, we aren't the only slingers in town." John lowered his voice to a threadbare whisper. "Hangman is here."

"Hangman?" Lilly Li exclaimed in a soft voice that was nevertheless too loud for John's comfort. "What is he—"

"I should have explained that he's staying right across the street."

"Oh. Sorry, Johnny. Perhaps he is asleep?"

"Somehow I doubt it. In any case, I think we're going to need him, too."

Davies's eyes widened the width of a fine hair. "What makes you think he'll help us? And can we afford that kind of aid?"

"Hangman—by the way, his real name is Kelly Walsh and I strongly suggest we all start using it—Kelly seems to be going through a period of . . . change."

It was possible that Davies's eyes opened even wider. "Kelly?"

"Right. Ready for this? He asked me for a job today, but not as an executioner."

"And you said no."

"I told him I'd think about it, and I *have* been thinking about it. At first, I just meant to put him off, but for the last few hours, I've been getting this feeling that—"

The saloon doors swung open gently and Hangman, in no rush, eased softly into the room. He resembled a corpse more than ever. He looked around the room and nodded in satisfaction. "Good. I wasn't sure all five of you marshals were here. You're a man of few words, China Joe. But I heard my name mentioned, so I figured it was time to join the party. Any objections?"

Chapter 10

John was the first to break the awkward silence. "Might as well pull up a chair, Kelly."

"That won't be necessary, Marshal. I'll take this one." He'd been slowly walking toward the table as he spoke and he stopped directly behind Henri Jacques.

"Someone already sittin' here," Jacques stated calmly. His accent revealed that he hadn't been born on Tenderfoot, but on the smaller, more tropical continent of Espoir Nouvel, where Thai-influenced French was the primary language. The surreally colorful Mildew Jungle made Espoir Nouvel's interior uninhabitable, but the coast was dotted with towns. Dana realized that this was the first time she'd heard this giant speak an entire sentence. His voice was as deep as Hangman's, but smoother and had a honey-coated quality.

"Tell you what, Jacques," Hangman offered, taking off his long black coat and throwing it over a nearby table. "You and me can arm-wrestle for the spot." Beneath his jacket, he was wearing a short-sleeved white cotton undershirt and tight black trousers that accentuated the thinness of his long legs.

Jacques wasn't the only person who stared up at the cadaverous slinger in astonishment, but he was the one who answered. "You are joking with me, no?"

This was a fair question. Big as Hangman was, his arms looked like chopsticks compared to the oaken pillars hanging from Henri Jacques's vast shoulders.

"No joke," Hangman asserted quietly.

"Why should I have interes' in a silly game, monsieur?"

For a few tense seconds, the rumble, chatter, and squeak of the bathroom fan was the loudest sound in the saloon. "Because," Hangman finally said, turning icy eyes toward John, "I've got some vital information for you. But maybe I'll keep it to myself if you can't humor me some."

Tornado Carter stifled his mounting impatience. There was so little time and this nonsense was wasting it. Yet Hangman's "vital" information might be immediately important. Everyone was looking at John, waiting for his decision.

"Slow pressure?" he asked.

Hangman nodded. "Slow."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

That wasn't the response John had expected. He couldn't imagine what the former executioner was trying to prove here, but he figured that Hangman's only hope to win the contest involved sheer speed.

"Alright. Humor him, Henri."

Hangman seated himself at an empty round table and Jacques, casting a final quizzical glance all around, rose smoothly and sat down opposite his challenger. The pale slinger placed his elbow near the table's center and raised his forearm, opening his hand expectantly. Jacques matched his opponent's posture and gripped the white hand tightly.

In John's eyes, the two clasped hands—one so dark and one so light—seemed to mock an ideal he believed in strongly: multi-racial unity, one of the founding principles of Paladin society. Suddenly, he wished he hadn't agreed to this unequal showdown. One color had no business dominating. . . .

This wasn't a speed match. No one needed to say, "go." For a minute, the two men merely seemed to sit there, holding hands. But then, little by little, the muscles in Jacques's arm and chest began to swell and Hangman's muscles became so clearly delineated they began to resemble something out of an anatomy textbook. And the pressure grew and grew until the room felt suffocating with an inaudible, cable-about-to-snap scream. There was the faintest suggestion of unsteadiness in the two arms, but neither had budged from its original position.

After another minute, Jacques began to seriously bear down. When Hangman initially managed to resist this staggering new level of tension, Jacques glanced over at John in wonder. Now their arms were definitely shaking and an almost subsonic rumble started up and steadily grew louder. Their muscles were quivering so powerfully, the thick tabletop was vibrating like a Buildem loudspeaker. John's own right arm was aching in sympathy. . . .

As the Dust Devil applied even more force, Hangman slowly began to lose ground. But he fought every inch of the way, until the back of his hand finally touched the tabletop.

"Seems you win after all," the thin giant stated equably, rubbing his biceps.

Henri Jacques stood up, shaking his head in disbelief and with an arm-wave, silently offered his original chair to Hangman.

"No, Marshal," said the executioner. "You won it fair and square."

"All right," John stated. "I'm impressed, Kelly. Was that your point?"

Hangman walked over to his coat and pulled a Dark Nevada silver dollar from a pocket. "Haven't finished making my point," he said, approaching the table and slapping the coin down directly in front of John. "Say I try to grab that dollar. Think you can snatch it away before I can reach it?"

"You know I can."

"We all know you can. But let's try it anyway."

John shrugged and for a few seconds Hangman stood utterly still. Neither Dana nor Larker could follow what happened next. Hangman's arm moved faster than a striking cobra. As predicted, John reached the coin first, but he hadn't imagined how close the call would be. The big pale hand had actually brushed against his returning arm.

John gazed at Hangman speculatively. "I get the message, Kelly, but I never doubted you were *qualified* to join my agency."

"Then why not give me the nod?"

"It's a matter of personality and attitude. The Dust Devils have a certain . . . spirit and I'm not convinced you'd fit in."

"I'm willing to change. Marshal, I need to change."

John studied Kelly Walsh's eyes. What he saw was both reassuring and disturbing: sincerity, honesty, and the shadow of self-loathing.

"I believe you. I'm just not ready to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

say yes or no. Before I hire you, we'd have to resolve a few—I don't know—let's call them behavioral issues. And the rest of my team will be in on the final decision. Right now, I don't have time for any of that. So I know it isn't fair, but for tonight only, I'm asking for your help, if you're willing to give it freely. And I definitely want to hear this 'vital' information of yours."

"I respect your candor, Marshal. I'll offer some of my own: I've wanted to work for you for the last six years. I like the way you do business—always have. I'm your man, even if just for tonight."

"Good. That means something to me. And the information?"

The hint of warmth that had crept into Hangman's expression drained away. "You know I used to be executioner for Dakota Bill's Bullets. Last month, when we were all traveling through Cayce Canyon, we were ambushed near the biggest damn waterfall in New Arizona."

"We heard about that," John stated sympathetically.

"*That* was a bad day." Hangman squeezed his eyes nearly shut, as if the memory was painful to look at. "They were waiting for us and they knew how to hide. With the falls roaring in my ears, I couldn't hear a thing. Obviously they planned it that way, but maybe they made a mistake. Tumbledown Falls puts more than noise in the air—all that mist cuts visibility. But only three of us escaped alive and nobody got away without a scratch. Bill took one in the gut. He was stinking to high heaven and I had to carry him like he was a baby. Of us three survivors, I was in the best shape; I'd only been shot twice and both wounds were in one arm. My mount, Lucy," his voice tightened, "bled to death."

A chill ran up John's spine and he couldn't quite shrug it off. "How did you manage to live through it?"

"The mist helped. And our enemies—at the time I had no idea who they were—went for the fastest slingers first. As you've seen, I'm a tad quicker than most people think."

"More than a tad, I'd say."

"Kurt La Cruz and Bill managed to find enough cover to start firing back. I don't think the outlaws were expecting that. In the confusion, I worked my way around the ambushers and stole one of their animals—had to be big enough to carry three. You've seen that disgusting thing I'm riding."

"Hyena-based?"

"What else? Smells like hot bear piss and it doesn't like me any more than I like it, but it beats walking."

"Go on." John couldn't hide his disapproval.

Hangman shrugged. "At one point, the mist got real thick. Gave me enough time to pick up Kurt and Bill and get away. I'm not sure why they didn't come after us when they realized we were gone. That hyena isn't a great mover with three big men aboard. But two weeks later, soon as I could, I went back to Cayce Canyon and looked for a trail to follow."

"Weeks later? In rainy season? That's pretty open country for—"

"It doesn't rain quite so heavy in New Arizona, Marshal. Besides, I'm about the best tracker around. There are always signs if you're patient and know how to use your eyes."

"You should see Henri in action sometime. But—Lord above!—I'm afraid I see where this is going. Let me guess: you followed the outlaw trail all the way across western Tenderfoot to Red Clay County—"

If my hunch is right, John thought with a touch of real fright, William Caine could be the man behind *all* our troubles.

"—and you wound up in Aurado."

"You got the general idea, Marshal, but there's more. The ambushers didn't go directly to Aurado. They've got a concealed ranch across the Dark Nevada border, ten miles south of Dewdrop. I

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

spent two days spying on them; listening mostly. Behind their main house is the biggest barn I've ever seen. No windows. Its doors—and I only saw them open once—are three feet thick and steel-plated on the inside."

John didn't like the picture Hangman was painting. "What's happening in there?"

"That's what you'd better find out fast, because from listening and the one glimpse I got, I think they're breeding . . . animals."

This time Larker broke the silence. "What kind of animal?"

"Can't say, Sheriff. Couldn't see far enough inside. But it's something heavy and new—never heard such noises before. And like I said, that was the biggest damn barn I've seen in my entire life."

The slender giant described how he had, as John had unhappily guessed, finally tracked the outlaws to their main base of operations near Aurado. There, he learned that they worked for the infamous Dirty Jake.

Hangman finished by stating that he'd come to Sunstone intending to stay for a while. He wanted to be close to Aurado, but not too close. He felt that the gangsters who had murdered so many of his former associates and killed his steed deserved a response. He was prepared to wait around until just the right response came to mind.

When John took the floor again, he slowly looked around the group and something in his eyes made everyone sit up straighter.

"Thank you, Kelly. You were dead right: this is vital information." His voice practically crackled with new energy. "I'm sure everyone sees the implications: Dirty Jake is most likely the man responsible for *all* the attacks on the agencies." John's glowing eyes came to rest on the sheriff. "And maybe that gives us our first clue about Jake's overall strategy.

"But let's put that thought aside for the moment." John wasn't ready to let Hangman in on the Jake-Caine connection—if the secret hadn't already been overheard. "Right now, I want everyone to know what we're up against and why I'm willing to take a massive gamble. Do you feel well enough, Chou, to repeat what you told me about plasma-cannons?"

"Me? Hell, I'm ready to go dancing!" Behind Larker, Dr. Gray shot John a warning look.

"Don't overdo it," John continued. "Sheriff Larker is a weapons expert, folks." The statement raised a few eyebrows and ghost-smiles among the slingers and John was nettled. "I'm serious, damn it. We may be better at *using* weapons than him, but why couldn't he know more about them than all the rest of us put together? Any of you Dust Devils care to astonish us with your profound knowledge of energy weapons? How about you, Dave? Then kindly lose the smirk and listen up. Go ahead, Chou."

"Sure, John, but I hardly consider myself an expert. Here's what I do know: basically an ion-plasma cannon, or 'blast-torch,' is a semi-portable rocket engine combined with an ion gun and a tracking system." Larker could tell from the blank looks that he'd already left everyone but Davies a mile behind.

"I'll clarify. The cannon shoots fire; really *hot* fire—well past the melting temperature of steel. It has a fuel tank holding about a gallon of kerosene under tremendous pressure and it has a separate oxidizer tank. When the weapon is fired, the oxidizer mixes with the fuel and makes it burn hotter and more efficiently.

"Are you with me so far? There's a hypergolic version of the cannon . . . 'hypergolic' means ignition happens automatically when fuel and oxidizer come into contact. But Dirty Jake has the older model, which ignites fuel by sending out . . . call it a lightning-bolt. It also emits a hollow, cone-shaped stream of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

charged cesium atoms to bind oxygen on the flame's fringes. This limits and helps channel destruction. Meanwhile, the fuel itself is ionized by passing though a strong electric field and—" Larker sighed almost inaudibly. "'Ionizing' means adding or stripping away electrons. Once the fuel is ionized, it's easier for electric fields to direct and contain the flame and make it travel farther."

Silver Davies was wearing a slightly puzzled, slightly skeptical expression. "So it's some kind of fancy *flame-thrower,* if I'm remembering the label. Now, I don't know much about newfangled weapons—"

"Oldfangled in this case," Larker pointed out.

"Whatever you say. So maybe I'm being naïve, but I don't see why we can't simply shoot the bastard before he can pull the trigger."

"I was just getting to that, Marshal. A blast-torch isn't a simple flame-thrower. Plasma cannons have *force*. And they generate such strong recoil, they're supposed to be truck-mounted. I can't imagine how anyone, even a slinger the size of Marshal Joe Li, could fire one for more than an instant and expect to remain standing. So far, we've only seen Jake use the thing briefly on its lowest setting, but look at the floor over there. That's what even the smallest pulse can do.

"And forget the idea of shooting the operator. We're talking about *Earth* weapons, and even though this model is an antique, it can do tricks you never dreamed of."

"Such as?" Davies prompted.

"It's got a high-speed environment scanner and an automatic defense system. There's a computer on board—anyone *not* know what a computer is? Good, because I don't have time to explain every damn thing." Thank the Bodhisattvas for Buildem, Larker thought. If it weren't for that one city, we'd all be complete ignoramuses about anything electronic.

"The weapon's computer," he continued, "will detect approaching projectiles—anything from thrown knives to bullets to . . . fast fists—and vaporize them before they can hurt the operator. Assuming Jake can use the cannon without burning himself to death or knocking himself backwards into the next county—well, as long as the thing is powered up, he's a whole lot safer than he was in his mother's womb."

"With that single exception you told me about," John pointed out.

"That's right. The weapon *itself* is a liability." The Dust Devils were concentrating so hard on Larker's words now that they didn't even seem to be breathing. "It's a similar problem to one you find in rocket engines: you want the fuel to be hot, makes the engine more efficient, but if it gets too hot, it can explode. So early ion-plasma cannons used a technique borrowed from early rocket ships: regenerative cooling. The fuel chamber is surrounded by small tubes and fuel is constantly circulated through the tubes."

There was a powerful thump, and it took everyone a second to realize that Lo Pan had simply let his hand fall to the table. The titan wasn't frowning, but he wasn't smiling either.

"Mr. Tornado," he said quietly in a thick voice that wasn't as deep as the man's size implied, "I have a concern in my stomach. You intend to cause such a cannon to blow up?"

"That's the plan," John admitted. "Do you all understand why getting rid of the energy weapon is our top priority? With just *one* of those things and enough fuel, Jake could handle every lawman on Paladin. *Simultaneously*. If we—"

"This explosion," Lo Pan interrupted. "How big would it be?"

"Good question, Joe. Sheriff Larker showed me an old magazine article that talked about what would happen, theoretically, if a plasma cannon's fuel got overheated. According to this article,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

there's a kind of safety factor built in. The collapsing electric fields should limit the diameter of the resulting, um, *fireball* to somewhere between twenty and forty feet."

Lo Pan shook his massive head, more in wonder than denial. "And you intend to be nearby when this occurs? Now my slow mind finally understands why our sheriff was wondering earlier how you expect to survive."

"I *am* planning to be nearby, my friend, but with a lot of help, I hope to come out no more than medium rare. One final matter before we get to work: Chou, you told me that it takes about twenty minutes to ride from Aurado to Sunstone?"

"Without pushing it."

"Can anyone suggest a way to give us at least ten minutes warning before Dirty Jake gets here?"

After a few seconds of silence, Larker shifted nervously in his seat. "I've got one idea. Probably stupid. Someone with augmented night vision might be able to ride out to the New Nokai Dome and find the Anasazi. You'd need slinger eyes, because it's real hilly up there and traveling in the dark could be treacherous. But if the Indians knew what was happening, I'm sure they'd be happy to watch the road for you and I . . . I guarantee the Mudslingers would never know they were there."

"Indian scouts?"

"Sorry, John." Larker looked chagrined. "I've said too much already. Shining Wing's told me a few things in confidence and—"

"Don't worry about it. How could the Indians let us know the outlaws were on their way?"

"They could use smoke-signals if there's enough visibility. But maybe Anasazi 'thumpers' would be better."

"Thumpers?"

"Big hammers with wide flat heads. They're pounded on a metal plate nailed to the ground and the sound travels underground for miles and miles. If you put your ear—"

"None of that will be needed," Hangman said. "I was waiting for someone to ask me, but I'm volunteering. I'll just stand in the road at the end of town and *I'll* tell you when they're coming."

"You'll know ten minutes ahead of time?" Larker asked in awe.

"If you're interested, I'll also tell you how many are coming and what they're riding on."

Chapter 11

Morning brought the clearest sky Sunstone had enjoyed for months, although a fresh army of clouds was galloping in from the far north. The few drifting cumuli overhead had a slightly furtive look, like bullies who are only aggressive when surrounded by allies. Floating nearly as high were tiny white shapes, light-as-a-bubble "parawing" mushrooms waiting for the wind to die long enough for them to settle.

John was standing with Hangman atop a large, oval mound known as Yue Liang (Moon) Hill, about three hundred yards past the south end of town. Yue Liang was the only such irregularity for miles. The curved surface underfoot was clay so hard-baked by the summer sun that it had become waterproof. From this vantage point, the two men could observe how the crude road leaving town split in three directions: toward the southeast and Aurado, to the southwest where it looped around Lake Lonely before heading toward Mount McCurran on the long road to Wyatt, and the last road went directly south.

John had questions for his companion, but didn't want to interrupt Hangman's icy concentration. So he looked around, studied the scenery, listened to the muted roar of hidden Cai Hong Creek, which marked the western boundary of Sunstone, and wondered if this was one of those rare years when rainy season ended early.

The high iron and cinnabar content of local soil prevented native fungi from

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

growing directly on the ground. Still, small groves of Earth hardwood and modified fruit trees were visible from where John stood and bands of native rainbow-mushrooms festooned the tree trunks. The swatches of brilliant color gave the trees a festive, dressed-up-for-the-holidays appearance.

John gazed farther into the distance. Free of fog and rain, the vista was grander than he'd imagined when he'd first ridden into town. Sunstone was centered in a wide, shallow valley where the land sloped up very gradually in every direction but southwest, where it eased downwards. If he turned his head a bit to the right, John could make out the ghostly white top of mighty Mount McCurran. To his far left, barely visible in the distant mist, were faint suggestions of the Pillows, foothills of the grand Sierra Paladias, dividing Central Tenderfoot from Western Tenderfoot. Dawn was just singeing the top of Doorknob Peak, a small mountain set like a guardian among the Pillows, and a gentle hint of what lay further east.

The town blocked much of the northwest view, but over shorter buildings, he could see distant traces of a different kind of terrain. He guessed these volcanic-looking hills were outriders of the New Nokai Dome.

Final preparations were in progress while John and Hangman waited and listened. Pairs of townspeople were dragging wet blankets over the street's surface, effacing all signs of digging.

Hours earlier, Sheriff Larker had roused the town by having a deputy ring the alarm bell in a repeating pattern of three quick rings separated by short pauses. People had emerged blinking but not yawning and they'd come out fast—these days, no one in Sunstone slept like babies except babies. Larker briefly explained that Tornado Carter was in charge and turned the instantly eager crowd over to John for instructions.

He'd divided everyone into teams, issued orders, and his Dust Devils and every able-bodied local adult—and some less able—burst into surprisingly efficient action.

Even Coby Patterson showed up, stated seriously that he'd been "sober for over three stinking hours now," and asked what he could do to help.

John, remembering what Larker had said about Patterson's mechanical talents, assigned him to bleed the main methane lines the instant the streetlamps weren't needed. Patterson was startled at being put in such a responsible position, but pointed out, with unexpected cogency, that "bleeding" wasn't necessary. If he merely shut off the main valve at the compost tank, the lamps themselves would burn off the methane within ten minutes.

John agreed, delighted to see purpose and determination push aside some of the habitual pain in those bloodshot eyes. He was glad he'd followed his intuition earlier by introducing himself to Patterson as Tornado Carter.

Moving the sheriff's propane tank into position was effortless with Lo Pan and Henri Jacques around. Hooking the pipes together wasn't overly difficult either; it was just a matter of being inventive with fittings not intended to create long, straight lines.

Laying the pipes was easier than John had imagined. Lo Pan simply walked on them as if they were tightropes for beginners. His extreme weight sank them far enough into the mud, but the giant had to move slowly and cautiously to avoid putting pressure on them too quickly.

Meanwhile, Lilly Li, Deputy Banks, and various civilians led the Dust Devils' animals and the few steeds that were parked in town overnight to shelter in nearby barns and stables. Henri Jacques had given Lilly years of tutoring in dangerous-animal management and Hangman's ferocious hyena was a pussycat in her hands.

When she returned, she made sure

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the hotel's bullet-shutters were locked over its windows. The hotel's owner, Cal Fong, warned her that when his place was closed up tight, it became "stuffy." He wasn't *complaining*, he said, just stating a fact. She smiled sweetly and mentioned that, "the worst reek can usually be cured by a thorough cleaning."

After the hotel was secured, she organized a bucket brigade to splash water onto every inflammable surface near the southern end of Main Street. Soon the walls, bullet-shutters, boardwalks, courtesy bins, and hitching rails were saturated and dripping.

Henri Jacques had no problems with the viewports. All nine unbolted with ease, because whoever had installed them had had the foresight to coat the threads with heavy grease. The huge veterinarian carried them down a ladder one at a time and it was a good thing this ladder was extra strong.

Meanwhile, Dana Rider had gone into her storage room and pulled out a box of heavy lag bolts, two hand drills with some Earth-made borazon-coated bits, a tape measure, marking chalk, sandpaper, a rasp, and a crescent wrench. Tornado had chosen Dana and Davies, both knowledgeable carpenters, for the job he wanted done in the saloon.

Dana tried not to grin at how fastidiously her new partner hung up his jacket, fussing over every potential wrinkle. With that serious business out of the way, Davies rolled up his shirtsleeves (carefully) and got to work. He took five viewports from Jacques's growing pile, carting each one inside separately in a borrowed, heavy-duty wheelbarrow. Using Dana's tools and hardware, they prepared to mount all five on an interior bullet-shutter just left of the doorway.

Together, they measured, marked, and drilled. The slinger lifted each viewport in place by himself, holding it while Dana inserted and tightened the screw-like bolts, eliminating gaps by having the viewports overlap slightly.

By the time the fifth window was in place and the Dana-sized shield was finished, Davies's arms were shaking like trees in a Paladin earthquake and he had to take a break. As a top slinger, he could handle more weight than seemed probable, but not with Jacques's ease. Underscoring that difference, the giant entered the room, a medium-sized viewport tucked under each arm.

"Hey, Dave," he said quietly. "I'm all done pullin' these out so I thought I'd bring in some, eh, before I see what Johnny want next."

"Thanks, Henri. Didn't much fancy lugging more by myself. Put them against the far wall like a good fellow, would you?"

Jacques obliged, but with a scowl. "You the one need exercise, no?"

Davies grinned and blew his friend a kiss, eliciting a growl and a quick departure.

"I still don't understand why Johnny thinks all this is necessary," Dana complained after Jacques had left. "My shutters are good, solid stone maple, three inches thick. How could any bullet get through six inches of stone maple?"

"Ma'am, we're dealing with slingers here. These shutters will deflect *stray* shots, sure, but a top slinger can hit a specific spot over and over, eventually punching a hole through damn near anything."

"Oh."

"And who can say what illegal weapons, aside from the one we know of, our dear Mudslingers might be toting?"

The elegant lawman inspected their joint handwork, tilting his head and pursing his lips. "You'll stand with your back tight against the shield. We won't worry about extremely diagonal shots—that much wood grain will deflect bullets unpredictably—but a mildly diagonal shot could hit you if you step out too far."

"I'll remember. Will they really be able to pinpoint where the sound is coming

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

from so precisely?"

"Depends on who shows up. Another thing: see how our barrier narrows at the bottom? That's our punishment for trying to make a rectangle out of circles. Be sure to stand with your feet together."

Davies moved to the right-hand side of the doorway and resumed work, drilling two holes entirely through Dana's wall, one at eye-level for himself and the other lower and to the side for Lilly Li.

"If you're thinking about all this damage, Ma'am, we'll glue dowels in later."

"Call me Dana. And right now, Marshal, I don't give a damn about my *wall*. How are your arms? Ready to lift the next hard-window in place?"

"Well, I was hopin' Henri might pop in again, but I guess it's up to delicate me. But first, we'd better remove any splinters on the outside. We don't want these holes more obvious than they have to be. What happened to the sandpaper?"

While Davies went out to clean up the holes, Dana dealt with the sawdust and shavings on the floor. With every passing minute, her nerves wound tighter and she sternly repeated the promise she'd made to herself five years earlier: she might not be able to avoid fear, but she would never again wallow in it. . . .

"That was easy," said Davies, reentering the saloon accompanied by a confused-looking Deputy Banks. "Had a hunch you might prefer to be elsewhere, Dana, so I dug up a substitute carpenter."

"Thank you, Marshal," she replied sincerely. "I'll take you up on that. I wouldn't mind seeing what Tornado Carter is up to."

Davies watched her depart with a faint smile on his face; he'd noticed the way she and John looked at each other and he approved wholeheartedly. Then he sighed inaudibly and, with Banks's aid, mounted two more viewports, one over each hole he'd drilled, concave side facing the room. That was all he could do until the next elements of John's plan were in place.

While Davies and Dana had been busy, preparations had been going smoothly. The townspeople had thrown themselves into the work with a near-literal vengeance; this being their first and possibly only chance to take an active role in their situation.

The hairiest problems involved finding, moving, and burying the large empty "tank or vat" John had requested. One of the street's courtesy bins would have been convenient, but they were far too shallow for his purpose.

After an hour of searching and braincudgeling, Larker remembered a town relic so old and familiar he hadn't noticed it for years: an abandoned fifteen-hundred-gallon drum rusting away behind Sunstone's tank-leather tannery. John ran to inspect it.

The drum was almost too big. Seven feet tall, it was intact with only a few small holes near the bottom. John pronounced it suitable *if* the town had a viewport large enough to cover the top, which flared out to a five-foot diameter. The sheriff assured him that one such viewport existed, acting as a skylight in Sunstone's Buddhist temple.

"We'll have to get up on the roof to fetch that one," Larker observed. "Better send Marshals Jacques and Davies and maybe Mr. Walsh too. I'd hate to see Marshal Li up there . . . and I don't mean the missus."

Lo Pan's elephant, Pang, would have come in useful for moving the drum, but Lilly had already led Pang away. So Hangman and Jacques gritted their teeth and, sweating, carried the awkward and extremely heavy object into the town's center, setting it down where John indicated.

Lo Pan was just sinking the final length of pipe. He walked over to the drum and stated humbly that it didn't feel "right" where it was. John immedi-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ately ordered his unlikely team to haul the thing another few yards. They tried location after location along Main Street until they found a spot that Lo Pan didn't exactly approve of, but one he disapproved of less.

Then no one could locate a crowbar, so the three giants pried the top of the drum off using their bare fingers. Hangman glanced inside and, to John's surprise, chuckled.

"Would you look at that! Next time, Jacques, let's yank the lid *first*." Lo Pan courteously and easily tilted the drum far enough so that John and Larker could also see inside. It was filled with packing materials, translucent tubing, and elaborately shaped metal parts.

"Damn!" Larker muttered sheepishly. "Granddad said that thing was empty."

John glanced sharply at the sheriff. "And nobody here was curious enough to—never mind. Can anyone tell me what all these parts add up to? No one? How about you, Dana?"

Dana, who'd been observing from the sidewalk, hurried over to look. She looked tiny standing next to Lo Pan. "I have no idea, Johnny. Some kind of machine, obviously."

John was frowning now, worried about delay and obscurely troubled. "I was thinking this might have come from the old shop that used to be where your saloon is now."

"Definitely not. This big can has been around since . . . well, I'm sure it outdates the shop. Besides, it's hard to tell in shadow, but look way down toward the bottom."

"I see it, but I don't believe it. Wires! Someone hauled an electric-powered machine all the way from Buildem."

Dana leaned farther toward the opening and her eyes widened. "This machine may have come from Buildem, Johnny, but those parts weren't made from any Paladin alloy."

John felt a sudden chill. "How can you tell?"

"The drum isn't airtight and it's been sitting around for decades and these parts are *shiny*. Our best stainless steel would be discolored by now."

"Lord above, you're dead right. Which makes the questions even more interesting: What kind of machine is this and what's it doing *here*?"

Nobody offered a guess.

Another fourteen precious minutes passed before the drum was emptied and the parts all carted away. Then the fun began. Trying to shovel out a hole sufficiently deep to bury the drum vertically was a muddy nightmare. The clay beneath the surface was cohesive enough to hold its shape and it wasn't overly rocky, but surface muck kept pouring in and filling the hole.

Larker was feeling increasingly abashed at the road's condition. "Sorry about this, John. We've never let the street get this bad before, but our trenches got clogged when—"

"Don't apologize, Chou. If your road was dry, I wouldn't *have* a plan."

Lo Pan finally borrowed a big piece of plywood and used it as an impromptu plow, pushing multi-ton waves of muck aside. As Henri Jacques plied a huge shovel, the larger giant moved around him in a wide circle, keeping the deepening hole relatively dry. The area developed a bizarre aroma. Something in Lo Pan's unique biochemistry gave his sweat the odor of fresh-baked gingerbread, and the scent kept intensifying.

Normally, John rather liked Joe's scent, but the combination of rotting manure, mud, gingerbread, and his own fear was making him queasy. The unnatural placement of his internal organs, for which his parents had paid dearly, had its disadvantages.

The sky was getting noticeably brighter. Right on cue, the street lamps flickered and slowly went out.

Finally, the hole was big and deep enough. Lo Pan closed his eyes, held very still for a moment, then nodded as if some important issue had been resolved. With no explanation, he lowered

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the drum into the hole. It was a tight fit.

John inspected the results and gave his workers a quick but heartfelt smile. The opening was now barely below street level, precisely what John had wanted, and he quickly covered it with a waterproof tarp borrowed from a courtesy bin. He asked the giants to fill in any gaps between the drum and the hole, especially the crude, steep ramp that Jacques had dug in order to enter and exit the hole.

Townspeople started carting away excess clay and spreading it thinly over the sidewalk, while John scraped enough muck over the tarp to camouflage it.

He placed a wooden chair directly behind the buried drum and glanced up to see if Lo Pan had any comments. The giant's face was untroubled, so John forced himself to sit down and wait.

When his Dust Devils had finished their tasks, they gathered silently around Tornado Carter. Dana and Larker also stood quietly nearby.

"So far, very good," John remarked at last. "I don't want anyone to fall into this hole, so don't forget it's there. We're farther down the street than I'd originally planned, so we'll use *that* building to place the pull-rope." John was pointing to the Sunstone Bank, due west of the buried tank. "Who owns the bank?"

"It's a cooperative," said the sheriff. "We all own it. But you never explained the rope. I take it you want us to run it from here into the bank?"

"Right. I want a peephole in there protected by another viewport. Dave, that's more work for you and no variety. And we'll need a second hole for the rope. That hole should be low, lined up with the center of the drum's opening. The rope should go under the mud and then under the boardwalk to keep it hidden, then up into the building. A smooth bar or heavy-duty pulley should keep it from binding on the boardwalk."

"Doesn't sound difficult," Larker said. "What do you want the rope tied to on this end?"

"The big viewport, which we'll bury just east of the drum. At my signal, Lo Pan will pull on the rope from inside the bank and drag the cover over the opening. I hope. We'll leave some slack; I don't want the rope itself blocking the drum at first. The timing of this and the exact amount of pulling required are going to take practice. Kelly and Henri, I want that last viewport here right away. Then we'll find out. . . ."

"Find out what?" Larker asked.

"If Joe is as strong as I think he is; this is going to be too fussy to be a two or three man job. Meanwhile, the rest of us will hook up the plastic tubing to the gas-pipes and start burying that too. Get moving, folks; we're going to need a big loop and a lot of convolutions."

Chapter 12

"They're coming, Marshal," Hangman announced softly.

"How many?"

"Shhh . . . eight, maybe nine. I hear two large cats, probably lions, but there could be three—they run soft. Four antelope-types for sure. That wolverine that was here earlier . . . and something heavy that takes whacking big hops."

"Thanks," said John, waving his hand to warn Lilly Li, who was observing the hilltop from the saloon's roof. She immediately signaled Henri Jacques, who was standing in the street, keeping an eye on her. While Lilly jumped down, Jacques ran to pass the word quietly to the propane crew. The sight of someone Jacques's size moving that fast made people nowhere near him edge even farther away. When Silver Davies got the message, he closed a valve he'd installed to seal the new pipeline and disconnected the pipeline from the tank.

Jacques hastily buried that last bit of pipeline and, while townspeople smoothed these final tracks in the mud, he helped Lo Pan carry the tank down an alley, out of sight.

With preparations complete, every-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

one hurried to their posts. Davies, Lilly Li, and Dana went to the saloon; Joe Li, Doctor Gray, and Sheriff Larker went into the bank; Jacques and Hangman entered the hotel.

John had nothing to do for the moment but sit in his chair and fret.

Within ten seconds, he was bitterly aware that ten minutes can be a very long time. Suddenly, all the colors and smells around him seemed painfully intense and a hive-full of "what-ifs" began stinging him.

What if, he asked himself, the pipes are leaking too slowly to cause noticeable bubbles, but the smell gives away the show to some Mudslinger with a good nose? Uselessly, he wished that the town had some propane uncontaminated by the standard warning odor. He hoped the pungency of the street itself would confuse matters. . . .

What if Caine had changed so radically that John's educated guesses about Mudslinger deployment and tactics were way off? What if the explosion was far more . . . impressive than those experts from the antique magazine had believed? If so, perhaps he wouldn't be around to feel guilty. What if the outlaws simply started shooting from a distance and Dirty Jake wasn't interested in talking? The potential for calamity seemed infinite.

And why the hell hadn't he peed when he'd had a chance?

John observed himself—racing heart, trembling knees, and the way sweat kept trickling down his sides in the cool breeze—and he approved. He wanted to be this primed, because one thing was certain: a hell of an emergency was looming. But he couldn't afford to let his tension get out of control. He needed his muscles to stay flexible and fast.

John could hear his approaching enemies now, especially the deep, periodic thumping of a heavy body moving in great bounds—not a reassuring sound. He wished he'd had time to explain a few things to Dana. He wished he could stop thinking about how wonderful it would feel to jump up and run north as fast as his feet would carry him.

The sky was no longer clear, and a pattering of light rain began. John was so keyed up that each tiny droplet seemed to hit with a bang.

He was seated close enough to the end of town to see a quarter mile down the southeast curve of the road to Aurado, but for an agonizingly long time there was nothing to see. Dirty Jake's gang was apparently slowing down as they approached Sunstone; maybe they feared that Tornado Carter might have borrowed a page from their own bloody book and set up an ambush.

As the Mudslingers finally came into view, John felt a sense of relief. The waiting was over. The outlaws were less fearsome than imagination had painted them; they were only people, rather than demons or unstoppable forces. They were riding in the classic curved-wedge formation invented decades ago by William Caine and used subsequently by every law-agency on Tenderfoot. Each rider was responsible for watching a specific part of their surroundings and the two in the rear were mounted backwards.

The tight, consistent formation with its bobbing individual riders somehow suggested a weirdly carved merry-go-round, or some nightmare ship heaving into view. But both the pattern and its inherent discipline implied that Dirty Jake was, in some ways, still operating like William Caine.

As these enemies drew closer, John's fear gained new purchase. He'd gotten a distorted opinion of the Mudslingers. Evidently, Pretty-face and Rabbit-ears were poor examples of this gang's quality. John unhappily recognized five of the eight slingers approaching and he wasn't sure about the last two, since they were turned away from him. Aside from Malachite Preston, who was limited as top slingers go, all five were major talents. The four most lethal were former

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

law officers who'd been presumed dead for years.

One such was Shelly Rose, the original Grand Marshal for Rose's Raiders, an agency still working out of eastern Tenderfoot. Rose got his nickname, "Hard Nose," partly because of his attitude, but mostly because his augmented nose was a deadly infighting weapon: a bone-white, rock-hard tusk. He was riding a huge white lion, his gun-belt crowded with four guns.

Another was an enigmatic slinger, dressed entirely in dull black—even his guns had been black-enameled—and who went by one name only: Boke.

Behind Boke was Ringo Romanie, the knife specialist.

Next to Romanie rode the unmistakable figure of Harry Coyne, whose parents had made their son into a kind of economy-grade giant by providing him with a giraffe-like neck.

John couldn't recall a meaner looking crew, but the man leading the pack made his followers seem mild and amiable by comparison. There in the forefront, mounted on the back of a snarling, bipedal horror that might conceivably have started out as a kangaroo or wallaby or even a *rabbit*, was Dirty Jake himself.

Caine was wearing a long, black, tank-leather coat and no hat. His black-streaked gray hair was matted down from rain. A gleaming contraption of thick, twisted tubes and silver wires was slung across the outlaw's gaunt but broad shoulders. He had no other visible weapons, not even his trademark Colt 1911 pistols, the only such guns on Paladin.

John wondered if his eyes were playing tricks; Caine seemed faintly haloed in a ghastly ultramarine light.

Mere hours ago, John had reminded Dana that people seldom change their species of steed. Dirty Jake was clearly an exception. He'd always favored augmented horned antelopes, but the enormous animal beneath him now, with its curving yellow claws and four-inch teeth, probably regarded antelopes as light snacks. *This* beast would have fit right in on prehistoric Earth, when smilodons roamed the plains and the neighborhood sloth grew to fifteen feet tall. If the creature hadn't been upholstered in soft-looking auburn fur, it might have fit in even better millions of years earlier.

But it was the man, not his animal, who commanded attention. Without Shining Wing's warning, John wouldn't have even recognized his former friend and mentor.

This wasn't because so much time had passed. Plastic surgery was rare on Paladin because it was so inexpensive for parents to guarantee that their offspring would be reasonably attractive, yet Caine's face had been seriously altered; even his cheekbones were a different shape. The famous cobalt-blue eyes were now brown and his skin was darker. But perhaps the biggest difference was in mien, not appearance.

Twenty years ago, William Caine had been a stern man, larger than life, but hardly this diamond-tough icon of resolve, of conviction so intense it became fury. He remained, somehow, more *solid* than anyone else around. But the lines of sorrow in his lean cheeks were cut so deep they resembled terrible old scars. His eyes, even behind their new coloration, burned like fanned embers.

Dirty Jake made a clicking noise with his tongue. His animal instantly stilled and his gang halted near Sunstone's entrance. Caine glared straight ahead at the man sitting, apparently relaxed and unconcerned, two hundred yards away in the middle of Main Street. John tried to keep his face bland, but after a moment, Caine sighed with cold exasperation.

"What a pity," he said with genuine regret. "You, I could have fooled. So clever little Arjun recognized me after all." John guessed that "Arjun" was Shining Wing's first, as apart from his tribal, name.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The outlaw spat into the mud. "So I'm going to have to adjust my plans to fit."

John didn't like the sound of that.

"Tornado," Caine said very quietly, knowing that John could easily hear him. "This was the wrong time for you to show up. In the name of our old friendship, I'm giving you one chance to ride out of here before I have to do something I'll regret. And before you leave, I'll need your word of honor that you'll tell no one who I am. *You* can afford honor."

"Sorry, Bill. I'm too lazy today to go anywhere." Despite John's breezy words, he was disconcerted; this conversation wasn't going the way he'd expected. "Care to tell me why you've turned outlaw before we start shooting? I'd really like to know."

As John had hoped—counted on, in fact—Jake urged his mount forward and the other Mudslingers followed. John scratched his chin: the signal for Davies or Lilly to tell Dana to start the serenade.

Magnificently horrible trumpeting issued forth from the saloon. Incongruously, beneath the squealing and between those frequent moments when the sound was all muddy honk, John could detect a cheerful tune—a contrast that only heightened the unpleasantness.

Every Mudslinger steed reacted badly to the free concert. The antelopes began to buck. Malachite Preston's wolverine twisted from side to side and the lions started hissing like angry housecats, resisting all commands. The kangaroo-monster kept trying to turn around.

Unexpectedly, the cacophony abruptly settled into a prolonged high-pitched squeak and John was grateful that he was already sitting. His knees went rubbery and his arms became too weak to do anything but rest on his legs. Dully, he gazed at the Mudslingers. Every one was slumped in the saddle, their animals out of their control. . . .

Then Dana took a breath, her cornet resumed its normal honking, and the peculiar moment was over.

What was *that* all about? John wondered, alertness and strength flooding back.

The outlaws had recovered too. Several managed to draw guns, even while fighting their mounts back into obedience, but Caine growled once and every weapon snapped back into its holster. "Shut off that noise, Tornado," Caine ordered quietly. "Or we're done talking."

"Sure thing, Bill." John waved his hand, doing a fair imitation of the Buildem Symphony conductor. Blessed silence filled the air. "But how's a musician supposed to improve if they don't practice?"

Caine growled again, this time in annoyance, and made a brusque downward gesture. He and his followers dismounted and, one by one, tied their beasts to nearby hitching rails using quick-release knots. Slinger logic in action: the "music" could resume at any moment and a nervous steed makes a poor platform for accurate shooting.

John had planned on this; slingers could fend for themselves, but he detested the thought of harming animals.

If he wasn't so scared, he might have felt like smiling as the outlaws approached. They were spreading into a formation identical to the one he'd envisioned.

"You want to know what I'm up to?" Caine said, walking slowly forward while staring hard into John's eyes. "I'd like to tell you; I'd like nothing better. But I know you, son. Maybe I could convince you I was right about a few things, but you don't have the balls to do what's needed. At heart, you've always been a damn choirboy."

"So why bother talking with me at all?"

"I told you. Despite what you may think, I've always valued . . . certain people. You're one. Once upon a time, I respected choirboys. So I won't explain, but you'd better bloody believe me: I'm working toward something that has *got*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to happen. I want you to trust me and simply *get out of my way*. Will you do that for me?"

The request's sincerity and its power over him shook John. To make matters worse, Dirty Jake was still walking, getting closer to the buried drum. Another ten paces and he'd fall in. If that happened, John's plan would be in shambles. The other Mudslingers were also edging forward. . . .

John reached up and scratched behind his right ear. Three seconds later, the saloon doors opened too slowly to suggest an immediate attack and Marshal Lilly Li stepped lightly onto the sidewalk. She was holding a pale yellow handkerchief. Again with deliberate slowness, she placed one slender foot on the nearest hitching rail and proceeded to polish her raised boot. The Mudslingers weren't moving now, just watching her.

The kerchief, woven from a tough fungus-based fiber, began whipping back and forth faster and faster until even John could barely follow it. Suddenly the cloth was smoking. As it burst into flames, she dropped it to the muddy sidewalk, stepped on it, and bowed to her flabbergasted audience of rapists and murderers as if they were applauding. She smiled warmly and withdrew into the saloon.

Lord above, John thought, hope she didn't singe her toes off.

The outlaws weren't pleased. Lilly's presence changed everything; now it was clear that John wasn't alone and other Dust Devils could be hiding anywhere.

Caine scanned nearby buildings and roofs with eyes like magma. Angrily, he waved his men back with one arm and pulled the plasma cannon off his shoulder.

"Any idea what this is, Tornado?" he asked with deadly softness.

"Sure. I've got three of those toys back home in Wyatt, but I find my Colts more convenient."

Caine gazed sharply at John. "Bull*shit*! What the hell are you up to? I've *never* seen you act like an asshole before."

Stop overdoing it, John warned himself.

"People change, Bill. Like you, for example." John decided to take a chance. "I'm wondering; is there any connection between your new life of crime and . . . the Strake disaster?"

Caine's face clenched like a fist. "Damn you, Carter. I'm going to give you a taste of what this 'toy' can do."

He aimed the cannon downwards and gave the trigger a quick squeeze.

John's mind went into instant emergency overdrive. Time seemed to stretch fantastically. Even so, it wasn't easy to monitor the torrent of events.

Crimson lightning poured from the business end of the cannon. For an instant too brief to estimate, the lightning seemed like something solid and alive as it flashed and wiggled along the ground. Simultaneously, the eerie blue light surrounding Caine like an unholy halo intensified behind his back, sending out aurora-like streamers. In this sickening moment of temporal free-fall, John sensed that the blue light was somehow countering the weapon's recoil.

John was only halfway to his feet when a geyser, then a curtain of flame rose from the mud around Caine. An entire section of plastic tubing must have melted instantaneously. . . .

The outlaw reacted with outrageous speed. Before the fire reached his knees, he was squatting, obviously preparing to jump, his weapon lifted overhead. He sprang upwards and a strange thing happened: blue light flared *above* him. He only managed to get a few inches off the ground.

He swore, desperately reaching for something under his coat, but it was too late. Right before flame hid his face, he caught John's eye, transmitting both an appeal and a lethal promise.

All this was in a fraction of an eyeblink, but John had time enough to be

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

horrified. He hadn't intended to incinerate anyone.

The ignited gas—to normal eyes, an explosion—was spreading. While he still could, John urgently tried to see what had become of the other outlaws.

Mercifully, they had done the expected: jumped or run out of immediate danger. But they wouldn't be causing trouble anytime soon. They were all rolling around in the cool mud past the gas-mined area.

Then John's post was surrounded by a tall sheet of flame, cutting off his view.

Suddenly, Dirty Jake was dimly visible in the upper flames—whatever force had kept him pinned was gone. John was shaken. No slinger should have been able to jump so high. . . .

Yet, even superhuman leaping wasn't enough; the ground beneath Caine was bubbling. And hot air, even on a mild-gravity world, rises. Falling, the outlaw turned his smoking head toward the incapacitated members of his gang. Perhaps he considered tossing his blast-torch to them, but he didn't.

He must have known his weapon was too hot to trust. As he fell back into thicker fire, he threw the massive thing straight at Tornado Carter. The cannon spun glittering through the red air.

John snatched up his chair and hurled it directly at the weapon. He'd asked for a *heavy* chair for a reason. But if he missed, the cannon was going to land horribly close. . . .

It was, in every sense, out of his hands now; he jumped toward the buried drum, praying that Lo Pan's acumen hadn't taken the day off, that he was already pulling the chain. Only the eyes of intuition could see through this inferno.

John's skin was designed tough, but there were limits. And this heat was lethal; he couldn't inhale without searing his lungs. So he held his breath as he landed on the drum's covering, and kept holding it until he'd fallen, muddy tarp under his feet, to the bottom.

He crouched low, pushing the tarp aside to reach a puddle of cool dirty water that had collected. Urgently, he splashed water on his scorched face and hands, and felt, rather than saw, the viewport sliding into place above him.

Just in time. Accompanied by a thunderclap blast, a hideous light erupted, so intense that John could have counted every capillary in his closed eyelids. He covered his eyes with his hands, but the crimson remained painfully vivid.

Suddenly the idea of trusting calculations from some magazine—calculations based on Earth conditions!—seemed criminally idiotic. "What have I done?" he groaned. What arrogance to imagine that he'd allowed for a *safety* margin!

Visions of the entire town being blasted away gave him the suicidal impulse to lift off his hideaway's protective shield and find out just how bad his judgment had been. But old-fashioned fear kept him huddled, ankle deep in still-chilly water, like a man waiting for the world to end.

Perhaps the noise was the worst part. The roaring of a volcano-sized furnace seemed to strangle the air and shake the land. And that roaring was syncopated with squeaking, shrieking cries that seemed to be coming, inexplicably, from deep underground. . . .

He couldn't understand why the viewport above him, massive as it was, hadn't blown away like a dry leaf.

But he wasn't enjoying his luck. He remembered, bitterly, the promise he'd recently made to himself. Instead of protecting his friends and allies, he'd probably killed them all.

And there was no saying *he* was going to survive this. Despite his underground location, the air in the tank was getting hot. He could boil in here.

Suddenly, the hellish light dimmed and he opened his eyes. Then it took all his willpower to force himself to count slowly to sixty and do it again three more times. Four minutes was how long he guessed it would take the outside air

DIGITIZED BY UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to become breathable.

On the final "sixty," in a fever of impatience, he sprang up and shoved at the temporary ceiling with both hands. Then, before his ears had fully registered the sizzle of burning flesh, he was plunging his hands into the water at his feet.

He'd felt the heat radiating down from above, but somehow he hadn't realized that the viewport itself would get hot. They were such effective insulators—what kind of apocalypse had been blazing *outside*?

His hands were badly seared, but he still had an absolute need to learn what had happened. Ignoring the agony in his fingers, he quickly pulled off his jacket for use as a potholder. He only managed to lift the viewport up an inch or so, but a heartbeat later, the massive piece of plastic had been snatched away with a force that drove a sliver of hope into his soul. Lo Pan, at least, was alive and strong.

This wasn't greatly reassuring. Given Joe's nature, even if the giant were clinging to the jamb of death's door, he would have somehow managed to pull the viewport away.

John dropped his jacket and was about to leap blindly up to street-level when he realized that the torment in his hands was a message.

You complete fool, he snarled to himself. Can't you stop and plan for two seconds? You can't afford another mistake.

When he left his sanctuary shortly afterwards, he was better balanced, more prepared for contingencies.

To avoid landing in boiling mud, he jumped seven feet straight up, splaying his legs widely so that his boots could land on the drum's rim.

But the mud wasn't boiling. In fact, in a large rough circle whose center was only five yards in front of him, it wasn't mud any longer. At the edges, the circle was cracked baked clay. Closer to the middle, the street resembled glazed, fired pottery.

The ground was still fiercely hot. Gentle rain was falling, but turning to steam before it hit. There was no sign of the plasma cannon or the chair. And every storefront, wall, and bullet-shutter anywhere near the circle was now blackened. The nearby hitching rails had been terribly scorched. John wondered, numbly, what kind of beasts one would tie up to charcoal black rails. Creatures from ancient mythologies? Salamanders? Fire-breathing dragons?

He stood trembling, with his hands held low and close to his guns, trying to look as if he were ready to draw at the first hint of trouble.

This posture was a complete bluff. The pain in his fingers was intensifying and he doubted he'd be able to so much as touch his guns, let alone hold and fire them. But there was no immediate threat.

Squinting against heat that rose in visible waves, distorting the scene around him, he could see that the Mudslingers, for the most part, were gone. He'd expected as much. The fire would have left them too vulnerable. Plus, unless Caine had revealed more to his allies than John thought likely, the explosion would have come as a ghastly surprise. Savvy warriors know when to retreat.

Every outlaw's steed was gone, but not every Mudslinger had left. Two bodies were lying in the street, one at the very end of town, the other about fifty feet past the southern side of the blasted circle. Neither body was twitching.

For a minute, John simply stood, unwilling to think or move. Then his Dust Devils, one by one, emerged from their assigned positions, looked around, and nodded to him reassuringly. Lo Pan Li opened the bank's door, made a beckoning gesture to someone inside, and Sheriff Larker stepped out, breathing through a handkerchief. No one spoke, but John sent an urgent, questioning look toward Davies who responded with a flick of the fingers: Dust Devil

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

code for "all is well."

John's legs suddenly felt wobbly from relief and it was all he could do to keep upright. He was grateful that the townspeople were obeying his orders and staying inside for the moment.

Slowly, he summoned up the emotional strength to begin tallying up his sins. Hoping the viewport that had protected him was a trifle cooler than its surroundings, he used it as a steppingstone. In two quick jumps, he cleared the hottest part of the street without quite setting his boots ablaze. From there, it was a single leap to the sidewalk, which had to be sound under the char because it was supporting Lo Pan.

The giant gazed into John's face and his beatific expression transformed into a look of concern and empathy.

John couldn't speak and had to mouth the words, "thank you." Then, reluctantly, he went to examine the body at the end of the street. The closer corpse had to be William Caine and John couldn't yet bear to see what he'd done to his former mentor.

Even from a few feet away, it was hard to recognize Malachite Preston. The absurdly neat clothing was covered in muck. His body was lying in an undignified posture that seemed to flatly contradict the man's entire personality. But the horrifying feature was the way he'd been killed.

Some scrap from the explosion, a rock or perhaps a piece of the cannon, had evidently struck his forehead. The entire front of his skull had been punched all the way to the back. Brains had erupted out in a bloody halo around his head.

John had seen death before, many times, but he'd seldom seen it in such a grisly package.

"Hey, Johnny," came the quiet voice of Silver Davies from down the street. "Behind you."

John tore his eyes from the ruin of Preston's face and spun around. With tremendous care, as if each inch was a struggle, William Caine was getting to his feet.

The sight wasn't just alarming; it was petrifying. John had been certain the man was dead. There was no sane way he could have survived. And there was something horribly intimidating about this slow resurrection, something inexorable. Dirty Jake straightened to his full height, glanced around, and then began, step after painful step, to lurch in John's direction.

As Caine approached, John saw that the outlaw's face and hands were fretworks of mud, scorched skin, and blisters. In places, the underlying muscles showed through. Clear, puss-like fluid was putting a glossy varnish on all the damage and John couldn't imagine how the man was keeping himself from screaming, or what prodigy of willpower was keeping him upright.

Ten feet away from John, the outlaw stopped, standing tall and still. He opened his mouth and his blackened lips cracked like dry dough, sending rivulets of scarlet blood dripping down his chin. But when he spoke, his tone was conversational.

"Maybe I was wrong about you, Tornado. Maybe you're not such a choirboy after all." For the briefest moment, Caine stared at Preston's mutilated corpse and John couldn't guess what expression, if any, the former lawman was wearing. Whatever had tinted Caine's eyes brown must have fallen out or melted away; they were again the bright cobalt John remembered from the old days.

"For God's sake, Bill, there's a doctor here with buckets of healall. Let's get some on you straight away."

"No. We've got some business to take care of, you and I."

"Please, Bill." John realized he was nearly whimpering and didn't care. "You must be suffering and we can—"

"Shut up. Here's what's going to happen. Precisely one week from today we're going to meet in a place of your

GENERATED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

choosing. There, I'm going to tell you exactly why I founded the Mudslingers and you're going to agree to join me. From that time on you'll take my orders."

Had agony had driven the outlaw crazy? "I don't think—"

"I said shut up. If you don't agree to join me, we're going to have a shootout and I'm going to kill you."

"You're challenging me to a *duel?*"

"You heard me."

"Look, Bill. That's . . . not going to work." John was desperate to get this ridiculous situation resolved quickly; the burns on his hands were nothing compared to what Caine must be feeling. "You know there are exemptions built into the Slinger Code. Since I'm putting you under arrest, I'm not required to accept your challenge."

"There's a loophole in your bloody loophole: you're not physically capable of arresting me."

"Like hell I'm not. Look, this is for your own good. If you don't get some medical attention right now, I doubt that—"

"I'll see you in one week. And two days from now, I'll send someone into town to find out where our meeting will be. And the usual."

The "usual" was the choice of weapons and mode for the duel, left up to the challenged party. "You're not making sense, Bill. You're not going anywhere. How do you expect to get past me?" More bluff, but Caine wouldn't know that John's hands were out of commission. "You're badly hurt and unarmed. Also, at this moment, two of the finest sharpshooters on the damn planet are pointing pistols at your back."

"You've still got plenty to learn, son."

Caine slapped his stomach as if emphasizing his words. Instantly, the thick black muck on his torso sloughed off. Underneath was something that shimmered like freshly burnished armor. The armor was covered with long irregular snake-like bumps. Blue light flared and John suddenly felt dizzy and disoriented.

The outlaw was jumping away in rapid bounds. Each leap was so prodigious that John could only stare in shock. His dizziness faded, but he had barely enough presence of mind to notice a long flat canister or pack hanging from Caine's shoulders.

At the last moment, John tried to draw a pistol. As he'd feared, it hurt so much he couldn't get the thing out of its holster. Besides, he wasn't sure that he was emotionally capable of shooting a former friend in the back.

Davies and Lilly Li had no such compunctions; both were firing repeatedly. Their bullets had no visible effect. In seconds, Caine had reached Yue Liang Hill and turned southeast. Each time the outlaw's feet touched the ground, a burst of blue energy flashed. John watched the bouncing form shrink until it had vanished into the distance.

Chapter 13

"Johnny?"

Dana's voice yanked John from a bewildered reverie. He turned to face her and she threw her arms around him, hugging him tight. Surprised, he instinctively squeezed back, but with his arms, not his hands.

"What the hell *was* that?" he asked unhappily, suddenly gulping air as if he'd been holding his breath.

"What was what?"

"Oh—sorry, you couldn't have seen. Caine was wearing some kind of, um . . . vest that—"

"Tell me later. Right now I need to hear that you're all right."

"I'm all right."

Evidently, he wasn't persuasive. She pushed him away and looked him over rapidly but thoroughly. "Your hands are burned. Come." If he'd felt like arguing, it was too late; she was already tugging him along with surprising strength and more determination than he had energy to oppose.

A hundred yards ahead of them, Lilly

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Li was walking along, opening doors, telling townspeople that it was safe to come out, but suggesting politely that they keep to the sidewalk for the time being. Dana hadn't waited for anyone's permission to leave, but John couldn't fault her.

Silver Davies was hurrying off on some mission of his own and Joe Li was accompanying him. John wondered where they were going.

Aside from Dana, Barbara Gray, toting a large medical bag, was the first civilian outside. She spotted Preston's body and began running along the sidewalk in that direction.

As other people cautiously emerged, they also noticed the corpse, but stared mostly at what had happened to the buildings nearest the explosion.

John feared he knew what everyone was thinking. Look what Tornado Carter did to our town! And for what? Belatedly, he realized that he'd never explained to the *citizens* how crucial it was to eliminate the ion-cannon.

By now, the doctor was within shouting distance of John and Dana. "Anything I can do?" she called out, pointing with her free hand at Preston's body.

"No!" Dana shouted back. "But the marshal needs you."

Gray reached them at the exact moment they reached the sidewalk, but would have gone right past if Dana hadn't hastily grabbed the doctor's arm.

"What are you doing? Let go of me, Dana! I've got to see for myself that—"

"That man is dead. Everything above the nose is . . . gone."

"Oh. Well—let's take a peek at what we've got here, then.

John looked into Dr. Gray's eyes and thought he read something closer to disappointment than anger. He felt a sudden, terrible need to justify what he'd done, or at least explain that he didn't mean things to come out this way. But he didn't dare. He was afraid that once he got started, he wouldn't be able to stop. He'd wind up confessing every mistake he'd made in his whole life, all the way back to . . . the worst one.

Dr. Gray was examining his hands, her face professionally bland. "Second-degree burns for the most part. Blisters, redness, swelling. But see those whitish patches on your palm? Third degree. Quite serious."

John frowned at his palm. "Those spots don't seem to hurt as much as my fingers."

"That's because the damage goes down to the third skin layer; the nerves are gone. Frankly, I've never seen a slinger's hands seared this badly."

"You should have seen Jake," John muttered.

"If you were an ordinary fellow, Marshal, we'd begin a course of nerve and tissue regeneration immediately. In your case, I'm inclined to take a chance. If I'm wrong, you'll find out what 'enzymatic debriding' means. So we'll deal mostly with the pain and see how you're doing in a few days—that will depend on how cleverly your body was designed. Right now, we apply healall and take some scrapings. In an hour, I'll have grown you some good temporary skin."

"You're the doctor. But it's going to be a little embarrassing soon if I can't use my fingers."

Dr. Gray shrugged indifferently as she pulled a few items from her medical bag. "Need a toilet? You should've thought of that before you played with fire."

John dredged up a faint chuckle. "Next time, I'll bear that in mind."

Her touch, as she applied the lotion, was gentle. Soothing coolness spread across John's injuries and while it didn't completely put the fires out, at least it banked them.

She rubbed a small, slightly rough piece of plastic against his forearm for the "scrapings." "*Don't* rub your hands and don't let anything but healall touch them directly."

"I'll try to remember."

"Try hard. If you can't follow simple

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

instructions, you're on your own." She gave John a dubious look. "On second thought, why give you a chance to screw up? I think I have some . . ." She rummaged around in her bag. "Here it is."

The doctor held up a container with a pump mechanism on top. She worked the pump vigorously for a few seconds and then sprayed John's hands in several thin coats, covering everything evenly.

"Liquid bandage," she explained. "It will harden within two minutes and should protect your hands until we can get something better and more flexible on. But for heaven's sake, *don't* bang them into anything; this gunk is fragile. In one hour you come to my office, we'll clean the burns thoroughly, apply fresh salve, and stick on the temporary skin. One hour. Don't make me come get you."

"I won't, Doctor. And thank you; this feels much better."

"Of course."

With a final disapproving sniff, Barbara Gray put her supplies away and headed toward what was left of Malachite Preston. But she wasn't running.

Sheriff Larker gave John and Dana a crooked grin when the couple reached him, but he was clearly exhausted, leaning against a blackened wall. The bandages on his face were grimy and mud was smeared across his nose. To John, he'd never looked better.

"Go home, Chou," John said. "Get some rest." Dana nodded endorsement.

"I expect you're both right; I feel like a dry well. But hey! Congratulations, Marshal! Looks like your plan succeeded."

"I'm afraid this is what they call a—" John looked around bleakly, "—pyric victory."

"At this point, buddy, I'll take any kind of victory. Damaged buildings, we can repair."

"Speaking of damage, we'd better get people replacing or covering up the burnt surfaces right away. And we'll have to return the street to its, um, prior condition as soon as possible, which will take some doing."

"Worried about a surprise visit from proctors? Relax! My deputy is already getting repairs organized. Give us a day or two and we'll have everything looking normal."

"That's good to hear. Chou, I'm sorry for making such a mess of things."

"Sorry? Don't you realize what you've achieved here? Besides, 'Necessity does everything well.' That's how Mr. Ralph Emerson put it. Buddha! I feel like I should be doing something useful myself before I go off and take a damn nap, but I'm bushed."

"You've already done more than I had any right to expect. And maybe you can afford a rest. Looks like we're going to get a one week reprieve from Mudslingers."

"How do you figure?"

John hesitated a moment. "Caine challenged me to a duel. It's supposed to happen a week from today. I don't think he'll be sending out any raiding parties meanwhile."

Dana looked startled and alarmed, but Larker's eyes narrowed. "You're taking Jake's word for something?" he asked.

The question upset John out of all proportion. He knew Caine had turned outlaw; it just hadn't occurred to him that his old friend might now be *dishonest*.

"Hell, no! The man was *roasted*. I admit that he managed to get up and move around, which I can't explain, and maybe he's got the world's best regenerative enhancements, but you didn't see him from close up. If he expects to be in dueling shape, he'll need all the rest he can get and one hell of a doctor. *That's* why I figured the Mudslingers would be taking a holiday. Bill Caine's always had to keep control. He wouldn't send out raiders unless he was personally in charge."

Dana glanced at John questioningly,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

but said nothing. Larker looked a bit hurt.

"Lord above, Chou. I didn't mean to take your head off." John winced; the cliché had triggered a vision of Malachite Preston's corpse.

"Forget it, John. We're all overtired. I'm taking your advice and heading home. The wife should be stirring soon and I don't want her to worry. We'll have to put your Dust Devils—hey, maybe Dust *Angels* would be a better name!—we'll have to put them up in the hotel. It's not quite as bad as I told you. Remember what I said?"

"Something about the fleas deserving better?"

"Yeah, but I'm changing my story. The fleas could do worse. I'll stop and talk to Cal on my way home and set it up. The hotel isn't all that busy these days. Cal has rooms to spare."

"Cal's the owner?"

"Calvin Fong. Anyway, I'll see you both when I wake up or in a couple days, whichever comes first."

Dana gazed at the sheriff with affectionate concern. "Can you make it home by yourself? I could help."

"Thanks, dear, but no. I'll be fine; I just won't be sprinting. How about you, John? Your bed is waiting, too. Seems to me you didn't get much sleep last night either."

"If you don't mind, Chou," Dana said quietly, "I think it would be better if Johnny stayed . . . in a more central location."

Larker smiled at her. He forced himself fully upright, stated that he'd have someone bring over John's "stuff," and walked away slowly, whistling softly.

John turned to his companion. "Did you mean what I think you meant?"

"You're staying with me and I'm taking care of you until your hands are better. Unless you have objections?"

John had strong objections and he fully intended to voice them. He had no illusions about his chances against Bill Caine. Encouraging a new relationship seemed cruel at best. To his shame, what emerged from his mouth was a hoarse: "Sounds good to me."

Which do you suppose is more appalling, he wondered; my idiocy, my lack of decency, or my desperation?

Dana put her arm around his waist and steered him gently toward the saloon.

Across the way, Henri Jacques was assisting Lilly by telling townspeople it was safe to come out. John caught his eye as the giant emerged from a doorway and Jacques sent a mixed message by frowning, but flicking his fingers.

Hangman was already outside and he wasn't smiling either. John was getting better at reading Walsh's expressions—reading between the facial lines as it were—and he guessed that Hangman had overheard his final conversation with Dirty Jake.

The saloon was smoky, hot, and filled with irritating, kiln-like fumes when Dana and John stepped inside. Dana hurried off to get the back door open so the place could air out. She also pulled levers engaging the squeaky bathroom fan and a much quieter one in the stovehood.

"Funny," she said when she returned. "The outside air is clearing, but the smell seems to be getting stronger in here. I'm going to lock my front doors and leave a note outside for Gil and Shiliu, my bartender and my cook, telling them to come back in the late afternoon. I don't think we'll lose much business. Most of my customers will be sleeping through most of today."

John had been fighting with his conscience and wasn't interested in fumes or business. "I need to tell you something, Dana, while I still have a chance." And the will. . . .

"I'm listening."

"I'm fast, as slingers go, but I don't have a prayer against William Caine."

She studied his face seriously. "He's that good?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"He might well be the best of the best."

"In that case, you're going to have to make a sudden *improvement*."

"God knows I'll try to come up with something. But—do you see my point?"

She tilted her head slightly to one side. "I'm afraid I don't."

John didn't believe her, but knew better than to say so. "I'm afraid you and I aren't fated to have a . . . a long-term relationship."

"In that case—although I happen to think you're wrong—we'd better get started on our *short*-term relationship."

"But that's—"

"Isn't it better to make use of whatever time we have?"

John had the perfect argument against that line of reasoning. But he didn't get a chance to say it because she was kissing him before he'd gotten the first words out. And then it was definitely too late.

To his embarrassment, John was ten minutes tardy in getting to the doctor's office.

This wasn't because making love with Dana used up an entire hour and then some. In fact, the new couple didn't even complete the process (although they took some heroic strides in the right direction). They were both eager to clear the hurdle of initial awkwardness, but agreed to wait a bit longer because John wanted, especially for their first time, to have at least partial use of his hands. Privately, he also wanted to be considerably cleaner.

The extra time had slipped away while trying to invent a reasonably dignified way for John to empty his bladder. Their attempts to gracefully manage the task became progressively more hilarious. John couldn't remember the last time he'd laughed so hard that he couldn't breathe. It was astonishing to him that he'd moved so quickly from misery to euphoria. But then he realized, in a flash of sobriety, that the new emotion was, in a sense, a child of the old one.

Barbara Gray said nothing about John's tardiness. She dissolved his spray-on bandages in some blue-tinted goop and then had him soak his hands in a clear fluid while she stirred the stuff with a sterilized chopstick. When the liquid turned brown, John's fingers began to ache, then burn.

"Tell me when it starts to hurt."

"Uh, about three minutes ago."

The doctor gave John a look. "For awhile there, I wondered if I'd finally run into a man who wasn't entirely a moron. Thanks for clearing up the matter. Pick up your hands and let them drip into the bowl. Why are you smiling?"

"Must be your great bedside manner."

To John's surprise and delight, her response was a brief, barely visible smile. Then she looked as severe and disapproving as ever.

Ten minutes later, he walked from the office with his hands feeling as if they were encased in thin rubber gloves. They looked bizarre: smooth, white, and glossy, with only a hint of the damaged tissue beneath the surface. The temporary skin was clumsy and numb and would only last a few days, but he was profoundly thankful for modern medicine. At least he could wiggle his fingers now! It remained to be seen if he could unbutton his own pants.

His first order of business was to see if he could manage his weapons. He cautiously drew a gun and even more cautiously placed his firing-finger on the trigger. The good news was that his index finger still fit between the trigger and guard; the bad news was that it barely fit. It would be easy to fire accidentally. He returned the Colt to its holster, wishing he could leave it there permanently.

Sunstone appeared unnaturally busy as John strolled up the street. A crew with hammers, chisels, and goggles was chipping away at the baked part of the road, producing sharp, arrhythmic clinks and occasional curses. Another

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

crew was scraping walls, then rinsing them with a biological solvent. In places, the road's surface was still steaming faintly.

John was in no rush; Dana would be busy for a while, getting the saloon ready to reopen this evening and he was in no shape to assist in the town cleanup.

He let his eyes wander to the end of the street. Preston's body was gone. An image popped into John's mind of some poor soul having to scoop up the insides of a human head with a shovel. He shuddered and gazed at the blackened walls ahead with renewed dismay.

When he crossed River Boulevard, John began thinking about his friends. Through no wisdom of his, they *had* survived. While he had failures to choke on, here was something to savor. He hoped Lilly and the others would be comfortable in the hotel and felt a bit guilty over his . . . special accommodations.

One Dust Devil wasn't napping. Henri Jacques was sitting on the sidewalk under the hotel awning, his back against a post and his massive legs sticking out into the road. He nodded as John approached, but kept his eyes on his work.

In one enormous hand, he was grasping a small but elaborate ball-within-a-ball-within-a-box he'd been sculpting for months. His other hand held a wood-carving knife with a tiny sickle-shaped blade. Nearly invisible shavings were falling onto a leather sheet draped over his legs. When the sculpture was complete, he'd rub these shavings on surfaces already polished to a high gloss for a final luster. The wood was white, matching the diagonal streak in Jacques's hair.

"You drew first watch, Henri? Let me know when it's my turn."

"You don't get no turns. You rest up good, you."

John sighed softly and sat down next to his partner. "I don't need or want special treatment, Henri. I'll be fine."

Jacques said nothing and John sighed again. "Sometimes I wonder if I'm running the Dust Devils or you all are running me."

"It is good for man to wonder."

"Thanks for the encouragement. You know, my friend, it occurs to me that if you ever got a stuffed-up nose, you'd have to do your sentry duties on a roof like a normal person."

"Nothing, monsieur, stuffs *this* nose!"

"You're a superman in the nose department," John acknowledged.

Jacques shrugged deprecatingly. "A strong enough wind in my face, and I don' know what sneaking up behind me." He pointed his carving tool upwards. "Then I must climb like everybody else. Mos' everybody. The big one, he never stand on no roof." The "big one" was, of course, Lo Pan.

"If I was a roof, I'd be grateful about that."

Jacques nodded seriously as he carefully whittled away a microscopic bump. "That Joe. He make two of me and six of you!"

John watched his friend carve for a few minutes, amazed as always at how the veterinarian managed to do such precise work with such bulky hands. Finally, the giant stopped and studied John with an odd expression on his dark face.

"You and that lady you like so much, you been getting friendly, eh?"

John flushed, realizing that Jacques's augmented sense of smell had undoubtedly picked up all sorts of revealing signals.

"Lord above, Henri!"

"I don' mean to—"

"Don't apologize; I can't rely on your abilities and then turn around and complain about them. Just tell me one thing I've always wondered about and never remember to ask. Do people ever smell . . . bad to you? You never grumble."

"To me, Johnny, not much smell *bad*." Jacques closed his eyes, searching for the right words in English. "But every-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

thing smell *interesting*. There is a . . . deepness to odors. Maybe your nose can't reach that deep, eh?"

"Probably not."

"Go off to sleep, Johnny." A trace of apprehension settled across Jacques's strong features. "You got some good thinking to do bye and bye and your brain need good rest, no?"

John could see only one explanation for that remark. "Has Kelly Walsh talked to you?"

"No, Johnny. He don' flap his mouth freely, that one. But he knows something. I got eyes, not just nose. He was out here a small hour ago, looking over at your lady's place there. Maybe he wanted to talk to you then? But maybe he heard some small noise from in the saloon and didn't want to . . . interrup' l'amour novelle. But I saw signs in his face, Johnny: some badness is coming."

"Obviously, there's no damn privacy around here," John said in embarrassed exasperation. "But I know what's bothering Walsh. You aren't going to like this, Henri, but Bill Caine challenged me to a personal duel. I've got a week to prepare."

Jacques said nothing, but stopped working on the little box.

John reached up to place a hand on a massive shoulder. "Try not to worry, my friend. At least we have time to think up a plan."

"Get to sleep," the huge man ordered quietly. "I have some thinking of my own to do."

"I hear and obey. You can tell the others about the duel, but let's wait until tonight to discuss it. All right? I'll see you soon. And don't cut yourself—that knife looks sharp." Jacques didn't smile.

Weary and troubled, John stood up and walked quickly across the gently steaming street.

Chapter 14

Dana's bathroom, in her apartment above the saloon, was cramped. It lacked windows, but a ceiling vent emitted a smooth rumble from another mechanically driven fan. The shower's nozzle pressure was low and the water wasn't quite hot enough.

Nevertheless, to John the bathroom was luxurious. Hot and cold running water and flush toilets weren't amenities he took for granted; many small towns didn't bother with such trivialities.

John rolled up his muddy clothes and left them on the tiled floor, hoping that Larker would remember his promise to have John's bags brought over. After a shower and a nap, it would be nice to have something clean to change into. He dried off with a towel sporting an embroidered blue piano and rinsed his mouth out with some of Dana's toothwash. His mouth tingled as the tailored bacteria thoroughly cleaned every surface, leaving his teeth sparkling.

His face in the bathroom mirror was almost a stranger's. My eyes, he thought somberly, must be going on a *long* trip, because they've sure packed some big bags.

He retrieved his holstered guns from their resting place on the bathroom hamper and carried them into Dana's bedroom, along with what he referred to as his "Lumbar Luger," a specially designed flat pistol with two horizontally-spaced apertures, three inches apart, which acted as barrels. He carefully placed these weapons under one edge of the bed-frame so he could get them out quickly, and pulled one Colt partway from its holster.

White curtains made of tough fungus-fiber covered the street-side wall, but two of the three windows visible behind these thin drapes were blocked by external bullet-shutters. The central window was round and glowing brightly behind the delicate fabric, obviously a viewport. John walked to the wall, opened a tiny gap between the curtains, and peered through the plastic lens down at the street. Henri Jacques had company. Lo Pan's massive bulk was

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

seated beside him, precisely where John had been sitting fifteen minutes ago, and the two men were deep in conversation.

John wasn't Hangman. He couldn't hear their voices from across the street and through the thick plastic, but he knew what his friends were discussing. He sighed, let the curtains fall closed, and allowed himself to feel his exhaustion.

Dana, after asking about his hands, had commanded him to go upstairs, get into bed, and go right to sleep. She still had to wash the grit off her floor before she could take a nap herself. As John pulled back her quilt, rococo with musical instrument appliqués, and pulled back her top sheet, embossed with the stitched outlines of violins and flutes, he was very happy he'd decided to shower before sleeping. The soft mattress smelled wonderful to him, clean with just a hint of delicate perfume. That faint scent somehow nullified the charred-wood odors still clinging to the air for dear life.

There was something uncomfortably intimate about lying, naked, in a semi-stranger's bed and John was sure he was going to have trouble drifting off. Then, what seemed an instant later, loud banging from downstairs woke him up.

"Damn!" Dana muttered sleepily, sliding from under the covers next to him and opening the bedroom door. "I'll be right there," she shouted down the stairs. "Just a minute!"

John stared at her nude form in mixed astonishment: amazed by how beautiful and desirable her body seemed to him, but far more amazed that he already trusted this woman so much, he could sleep through her getting into bed beside him.

Dana gazed blearily at the timepiece on her bedside table. "That must be Shiliu. She likes to get her prep-work done early. And it *is* early yet. Try to go back to sleep, dear."

Fat chance, John thought.

As Dana slipped on a robe and hustled down to unlock and open the door, John listened.

"Chou!" she said. "What are you doing here? I would have thought you'd sleep forever."

"Not me! Slept for three solid hours and found myself feeling too damn fired up to stay in bed. John's given me hope, Dana. That's better than all the sleep and half the coffee in the world. But . . . maybe he's given me some new things to fret about. I've got his bags outside and I—I'm sorry, but I really need to talk to him."

"I don't think—"

"It's all right," John called out from the top of the stairs. "Dana, if you'll just grab the satchel with the double buckles and carry it up here, I'll get dressed and—"

"Nonsense!" Chou yelled back. "I'll carry the damn thing myself. Like Joan Welsh once said: 'A man's health can be judged by which he takes two at a time—pills or stairs.' I'm no invalid!"

John wasn't an excessively modest person; when the Dust Devils were on the trail, modesty was impractical. Still, he felt somewhat embarrassed by his own body, although not for the usual reasons. He climbed back into bed, tugged the covers up to his chest, and waited.

Larker placed the large bag on the floor between Dana's dresser and her treadle sewing machine. He parked himself on the corner of the mattress near John's feet. Dana cinched her robe a little tighter and sat down on her side of the bed.

It was hard to be sure because of the bandages, but John thought Larker looked better, that the swelling had gone down considerably in the last few hours.

"Real sorry to pester you, Marshal," Chou said with brittle cheer. "I know you need your beauty sleep, but I've got a town to care for."

"That you do. Something in particular on your mind?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Remember how you figured we have that week grace period?"

"Yes?"

"Well, it struck me that Jake wouldn't be raiding us anyway for awhile. Even aside from his injuries. Not now that he knows you and your team are here. He might show up for all-out war, but not just to steal a few pies."

John shrugged. "That's possible."

The sheriff rubbed his hands together nervously. "Well, I don't know what your plans are, now that you've dealt with that plasma-cannon, but I got to wondering if you might, before long, be taking the Dust Devils on a trip to Aurado."

The word "plans" resonated strangely in John's ears. He suddenly had the sick feeling he'd forgotten something terribly important. But Larker deserved an immediate answer.

"You're afraid that at some point I might leave Sunstone unguarded?"

"Well . . . yes. I thought you might have to. At some point."

John closed his eyes for a moment, unconsciously tapping softly on his upper lip with an index finger. When he reopened them, they appeared to glow for few seconds.

"Caine can't be sure how many of my people are here, or when reinforcements might show up. So you're probably right, Chou. Even if he were in tiptop shape, he'd want more information before ordering another raid. Hell, Mudslingers are undoubtedly out searching for tracks right now. But here's my promise: for as long as I'm alive, at least three Dust Devils will remain in town until Sunstone is safe."

Larker relaxed visibly. His entire body seemed to radiate gratitude, but after a moment, he looked at John quizzically. "Something eating at you, buddy?"

John was shocked to realize that he was scowling. When had he started letting feelings parade across his face? So much for the carefully nurtured façade.

And where was his basic prudence? He'd only known these two people for a day, for God's sake. One day. He had no business being so sure of them, and absolutely no business being in Dana's bed. He felt awkwardly divided, disapproving of his newfound openness, yet disgusted with his high regard for mistrust. . . .

Maybe his heart knew something he didn't.

"Any number of things are bothering me," he confessed. "The worst is that I have this sense I'm supposed to be doing something, but I'm not sure what."

"What you're supposed to be doing," Dana observed, "is recuperating. And the same goes for you, Chou Larker."

John shook his head, baffled. "Maybe so." He glanced over at the big glowing circle behind the curtains and had a minor inspiration.

"Well, we can clear up one mystery at least. Why does Sunstone have so many viewports? Do you two realize how rare they are? They must be worth three fortunes. I'm amazed Dirty Jake hasn't stolen every last one."

Both Dana and Larker nodded thoughtfully. "Yeah," Larker said. "I've wondered about Jake's . . . restraint myself. But I can sort of explain why we have this many."

"Sort of?"

"They were here before the town was built."

"*What?*"

"It's true. My granddad said so."

John shook his head in disbelief. "How did he know?"

"Don't mean to brag, but he was one of the first Paladin immigrants. His starship landed where Buildem is today. That area was already designated to become an industrial center and granddad wanted to get away from anything that reminded him of Earth. So he found a handful of people that felt the same way and they went roaming around Tenderfoot, living on ship-rations, looking for the perfect place to settle.

"Took them a year. Eventually they

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

wandered into Red Clay County and decided this was it. The creek was part of the reason. But another part was because of the hard windows. Real useful."

"I don't—"

"They found a big shed by the creek and inside were stacks of the damn things."

John sat up in bed and the covers fell unnoticed to his waist. "That's *crazy!*"

"It does sound a touch bizarre now that I'm talking about it. I guess I've lived my whole life with these things around, and never—"

"Look, Chou: as far as I know, no one has ever shipped loose viewports to Paladin. Why would they? And they haven't used viewports on bubble-ships for a hundred years. The ones here must have been taken from the original colony-ships."

"Yeah . . . I suppose."

"Those colony ships, if you'll recall, were all disassembled and rebuilt as houses and offices. The ship viewports were used for windows and the colonists wouldn't have wasted any. They weren't ready to start making glass, and besides, you don't even have to cover viewports during sandstorms."

"They're tough all right."

John nodded. "So that brings up an interesting question: are Sunstone's buildings made entirely of wood, or does the wood merely dress up something older?"

"Just wood, mostly. We have a few rammed-earth homes built before Paladin had big trees. But none of our buildings have metal frames, if that's what you're getting at."

John's lips thinned at the mention of big trees; he'd grown up in Happy Trails Territory, within earshot of constantly whining sawmills. He shook his head, but the memories refused to dislodge.

"In that case," he said a bit louder than necessary, "we've got quite a puzzle on our hands. The notion that someone hauled a bunch of viewports here for the hell of it is completely absurd. So we have to assume that a colony ship landed here and the colonists removed the windows and stored them."

"What a weird idea!"

"Can you offer a better one?"

"No," Larker admitted reluctantly. "Guess I can't."

"Then we run into the next problem. Look around. Clearly, the starship wasn't transformed into the usual prefab buildings. And it couldn't just take off again for a nicer location; not with its viewports removed. So *where is the ship*? It's hard to miss something the size of a thirty-story—"

"I get the point, John." Larker's eyebrows bunched in thought. "It *does* seem damn odd. But all I can tell you is what granddad told me."

"A big shed in the middle of nowhere? Lord. And we haven't run out of absurdities yet: the way I heard it, even the *biggest* ships had no more than twenty viewports. I counted thirty on one side of Main Street alone."

"Buddha! You've really set me to wondering. What do you think, Dana?"

"I'm not sure what to think."

"A shed," John repeated, shaking his head. "Was anything else inside?"

"No. Yes! That old drum we buried was in there, too."

Compounding mysteries . . .

"And granddad claimed the drum was empty?"

"He sure did."

"And for years and years, nobody in town bothered peeking inside?"

"Hell no. It was just a piece of old rusting junk."

Dana looked sheepish. "One day, when I was a kid and no grownups were watching, Cal Fong and I sneaked over with a ladder and tried to get the lid off. But we couldn't. We figured it had been welded on."

"All right. Do either of you have a *theory* about who put that shed up or why?" John asked.

"Not me." Chou frowned. "To tell the truth, this is starting to scare me a little."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Dana stirred restlessly. "As long as we're answering questions, rather than doing what we should be doing—sleeping!—I've got one for *you*, Johnny."

"Sure. Go ahead."

"Why didn't you tell us you were Tornado Carter right from the start?"

"I'm glad you asked," he said. "I've been dying for a chance to explain. One reason is my own safety; I'm a coward at heart."

"That so?" the sheriff asked with a smile.

"Definitely. Still, I like to check out trouble spots alone before I call my team in. Why risk anyone unnecessarily? But if word gets out that Tornado Carter has shown up somewhere without the Dust Devils, local outlaws might decide it would be good time to . . . explore my limitations. So whenever I can, I use another name."

"Makes sense," Larker admitted.

"But there's another reason, equally important to me. Do either of you have any idea of what it's like to be—well, famous?"

"Not me," Dana stated firmly. Larker shrugged and shook his head from side to side.

"It's confusing. People treat you differently. Quite a few are attracted to you for bizarre reasons. But the strangest part is the way it makes you feel about *yourself*."

Dana leaned forward. "Does it—what's that quote you use, Chou?—'fan the fires of vanity'?"

"It might if you're not careful. I've had a few years to think about this. It seems to me that people, to a great degree, use other people as a kind of mirror. Far as I know, there simply isn't another way to see yourself clearly, to see the flaws in your own behavior or personality, the flaws hidden from you by how *used* to yourself you are. Am I making sense?"

Both listeners nodded agreement, Dana more vigorously.

"Also, I think people need a context to know who they are, and that context is largely a matter of human relationships. But when you get a big reputation, people react to *that* and relationships aren't quite real."

"The mirror gets distorted," Dana offered helpfully.

"Exactly. So, when I show up someplace where I'm not recognized, I try to keep it that way for as long as I can. But knowing you two the way I do now, I feel terrible to have lied to you. All I can do is apologize."

Larker lifted his chin but kept his tired eyes on John's face. "Not necessary. But I'm still not clear on one point. Why claim to be Silver Davies? He has quite the reputation himself."

"Sure. But who should I have pretended to be when we first met? Right away, you'd know I was a top slinger; I don't know how to hide that for long. And to do my job, which meant getting you to talk to me, I had to admit I was a Dust Devil."

"Ah! For all you knew, someone had sent me a list of your important agents with descriptions."

"Right. Dave is the only one of my top slingers who even faintly resembles me. I suppose I could have claimed to be Lilly."

Larker chuckled, then yawned. "Just maybe I'll take up my nap where I left off. And to prove what a considerate fellow I am, I'll leave you two alone, so that John can do all the apologizing he wants . . . in private. I'll swing by sometime tonight and we can talk about where we go from here."

"Good idea," John said. "I'm thinking we'll have a meeting around eight and see if anyone can figure a way to run a ladder down the hole I'm in."

"I'll be there. Count on it."

As soon as Larker was gone, Dana and John caught each other's eyes. They both smiled sheepishly.

"It would be nice, Johnny, but I've really got to finish things downstairs. *My* top agents will be showing up any

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

minute."

"That's a shame," John observed softly.

"Also," Dana said matter-of-factly, "we need to discuss birth control. Are you a typical slinger, or should I make a quick trip to Barbara's office?"

"I'm typical, in that way. My parents paid for the whole routine. I mean the *whole* routine. It would take some . . . preparation for me to, um, become a daddy."

"You've got 'arabs,'" Dana stated, her eyes turning impish. "Arabs" were retractable testicles (they could silently steal away), an advantage in combat situations.

"That I do," John admitted with a twinge of embarrassment.

Dana studied his upper torso with frank appreciation. "You really are put together beautifully, Johnny. Were your parents wealthy?"

"Not at all. They—they saved up."

Dana touched his forearm placatingly. "I'm sorry. I can see that I asked a hurtful question, but I have no idea what made it so upsetting."

"It's not your fault, Dana. I'm just a little sensitive on the subject. I'll tell you about it, but not just now. Is that all right?"

"Of course. I'm sure there are lots of things we don't know about each other. You've never even asked me—" the twinkle in her eyes brightened "—if I'm already in a relationship. I might even be *married,* for all you know."

John frowned. "Chou said you weren't."

"Did he? When was this?"

"About the second time I laid eyes on you. He *volunteered* the information. Hey! You've never asked *me* that question."

"I don't have to," she said smugly. "I may not understand you completely yet, Tornado Carter, but I know this much: if you were involved with someone else, you wouldn't be lying there right now. Would you?"

"I would hope not. But I'd sure hate to be anywhere else."

"I'm glad to hear—whoa! Look at the time! Go back to sleep. If you want, I'll come up and roust you when the sun goes down."

"I want."

"Are your hands still comfortable?"

"They're fine. Sure you can't grab just a little more rest yourself?"

"Ha! I know what you're up to, sir. I'll be back before you know it."■

To be continued!

READERS: If you are having problems finding Analog Science Fiction and Fact at your favorite retailer, we want to help. First let the store manager know that you want the store to carry Analog. Then send us a letter or postcard telling us the full name and address of the store (with street name and number, if possible). Write to us at: Analog Science Fiction and Fact, Dept. NS, 6 Prowitt St., Norwalk, CT 06855-1220. Thank you!

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE REFERENCE LIBRARY Tom Easton

Coyote, Allen Steele, Ace, $23.95, 390 pp. (ISBN: 0-441-00974-3).

Strange Seas, Suzy McKee Charnas, Hidden Knowledge (www.hidden-knowledge.com), $8.95 (download), $13.95 (CD-ROM—pdf, html, and lit formats) (ISBN: 0967915910).

The Dawn of Amber, John Gregory Betancourt, ibooks, $24.00, 299 pp. (ISBN: 0-7434-5240-2).

Ersatz Nation, Tim Kenyon, Big Engine, £9.99, 232 pp. (ISBN: 1-903468-07-8).

Black Projects, White Knights, Kage Baker, Golden Gryphon, $24.95, 288 pp. (ISBN: 1-930846-11-8).

Tapping the Dream Tree, Charles de Lint, TOR, $26.95, 541 pp. (ISBN: 0-312-87401-4).

Alice: The Girl from Earth, Kir Bulychev, Fossicker Press (www.Fossicker-Books.com), $36.99, 504 pp. (ISBN: 1-4010-1312-0).

Through My Glasses Darkly, Frank M. Robinson, KaCSFFS Press (P.O. Box 36212, Kansas City, MO 64171-6212), $15.00, 116 pp. (ISBN: 0-935128-02-6).

Are We Having Fun Yet? William Sanders, Wildside, $15.95, 204 pp. (ISBN: 1-58715-709-8).

Aristotle and the Gun and Other Stories, L. Sprague de Camp, Five Star, $24.95, 222 pp. (ISBN: 0-7862-4311-2).

Speaking of the Fantastic, Darrell Schweitzer, Wildside, $16.00, 202 pp. (ISBN: 1-59224-001-1).

The March column already? The lionish winds howling around the eaves, the last snowdrifts forming in the driveway, the woodpile shrinking and the oil-tank near empty? But it's August as I write this, and I am just back from a week's basking on Cape Cod with my lady. The college year won't start till next month. Blackberries,–blueberries, green beans, broccoli, cucumbers, and more await picking in the garden. The lawn wants mowing, the sun is pounding on the roof, and here I swelter at my attic desk, trying to concentrate on . . . March?

Oh, well. So it goes, and here is Allen Steele's **Coyote**, a fat epic of escape to the stars done with all Steele's usual skill and panache. And the destination is chilly enough for August reading.

The US has fallen prey to right-wing ideologues who have rewritten the Constitution, done away with the Bill of Rights, renamed the country (minus Pacifica and New England, who have armed their borders) the United Republic of America, given a Department of Internal Security the powers of East Germany's erstwhile *stasi* or the Soviet KGB, and interned dissident intellectuals (DIs), meaning any scientist, university faculty member, or educated person who dares to question the party line. The tyrants say they have brought Amer-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ica back to its roots, its true self, but the Liberty Bell is no longer on public view, apparently for fear that it might inspire rebellion.

This is hardly a novel premise, for it has been used in one form or another many times. However, it is extraordinarily timely in a post-9/11 world in which the nation's Attorney General can say with a straight face that those who disagree with government policy are guilty of aiding the nation's enemies, as John Ashcroft did in December 2001. Fortunately, the press promptly identified Ashcroft's statement as an effort to stifle dissent by equating it with treason, and Ashcroft did back off a bit (though not before calling the press part of the problem). Still, the loss of civil liberties, coupled with this clear statement of the right-wing attitude, makes anyone with a sense of history think of Joseph McCarthy and Richard Nixon, Joseph Stalin and the gulags of Siberia, Adolph Hitler, Mao, Pol Pot, and other tyrants who see only threats to their power in those who think for themselves.

But this is only Steele's premise. The new America has continued to search interstellar space for planets and found one system whose gas giant is circled by a number of moons, one of which, Coyote, just might be livable. It then built a starship, the *URSS Alabama*, to carry a crew of about a hundred loyal citizens off to plant the flag, settle a world, and expand the empire among the stars.

Fairly naturally, some of those interned DIs are the scientists and engineers who designed and built the ship. They know it well, and they would dearly love to escape the Republic. With the aid of the ship's commanding officer, Robert E. Lee, and most of his crew, they therefore sandbag the non-crew colonists and steal the ship on its launch day. Heigh-ho, and off they go into the wild blue yonder, sleeping in suspended animation for the two-plus centuries of the voyage to Coyote. Sadly, one crew member awakens shortly after launch and goes quite mad from loneliness; why, he actually writes a fantasy novel! He also paints murals in the corridors and leaves a note saying that he has seen ships passing in the night.

Upon arrival, the colonists face the usual problems of pests, weather, and dissidence (a few are URA diehards). Steele now focuses on Carlos Montero, orphaned by a boid, a predator built like a giant ostrich (the Earthly equivalents were the elephant bird or roc, *Aepyornis*, of Madagascar, which was extinct by 1700, and the South American "terror birds" [http://www.bbc.co.uk/education/darwin/exfiles/terrorbird.htm], which died out in the Pleistocene). The boy is a cranky misfit who becomes a teenaged dad, leads a brief voyage of exploration, and in due time redeems himself. That time arrives when the folks back home send a new set of colonists—remember those ships in the night?—and they turn out to be a new set of tyrants.

As is only natural. New immigrants follow the old, and in numbers to swamp whatever the old have built. It has happened on Earth a thousand times, and we often see the complaints about newcomers in the news. The pendulum swings, and at both extremes it's bad news for freedom and self-determination. Pioneers must move on, as long as there is anywhere to move on to.

I hope Steele is planning a new installment of the story, for the world of Coyote has a long and interesting history ahead of itself.

Almost three years ago, I reviewed Chelsea Quinn Yarbro's *Magnificat*, available only as an e-book from Hidden Knowledge. Yarbro now has a vampire historical novel (*In the Face of Death*) and a Hamlet prequel (*Alas, Poor Yorick*) available from the same source. Check the site (www.hidden-knowledge.com).

You will also find there a strange and interesting book by Suzy McKee Char-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

nas, best known for her award-winning science fiction and fantasy, but here stepping into rather different territory. **Strange Seas** begins with a recollection of childhood and an uncle who wanted aliens to exist so much that he refused to cheapen his longing with easy credulity. It then plunks the reader into a 1985 conversation with a friend who is channeling knowledge from a collective being called Miriam about our fellow ensouled beings, the whales. It is soon revealed that Charnas has in previous lives had many links with whales and whaling, which explains her long-suppressed longing for the sea, as well, perhaps, as a sense of being "at sea" in life and writing. Further conversations reveal much about the nature of cetaceans, including that they—or their collective soul-species—were once beings with hands who trashed their world as we are trashing ours. In expiation of their sin, they transmigrated to Earth to experience the trashing from the other end of the stick, so to speak.

For Charnas, whales, channeling, and her own "Deep Past" become something of an obsession, relieved only when her medium leaves for Europe and she herself takes a trip to Alaska to see whales with her own eyes. As she works through the obsession, she makes a number of points about human responsibility to the Earth and its other denizens that are well worth making even without being attached to a "New Age" vehicle. In the end, she moves on with her writing and her life.

She also produced this book, calling it a "memoir," changing enough details to make it fiction (she sets the World Science Fiction Convention in spring when it is actually Labor Day weekend), and claiming enough truth for it all to turn defensive at the end and try to defuse the self-styled skeptics who recoil from such matters with sneers and knee-jerk negativity. Unfortunately, her usual publishers weren't interested—it was just too far from her genre writing—and "New Age" publishers found it too different from their usual fare.

Why do I discuss it here? Am I—with sneer and negativity—calling Charnas's memoir a fantasy? Do I think she should have paid more attention to her uncle? I'm skeptical enough, for I'm a thorough materialist with no sympathy for New Age bushwah, and that business about cetaceans expiating past world-wrecking does make me bounce my eyebrows off the ceiling. But Charnas is one of us, of course, and I have been known to take that as sufficient excuse, especially when a book shows an interesting and hitherto unknown side of a writer.

Charnas fans will find *Strange Seas* fascinating even if they do not share her credulity. She brings an important piece of her life alive in very readable prose. The CD-ROM also provides related essays and links to many resources on whales and endangered species.

The late Roger Zelazny wrote many popular novels, among them the ten books of the Amber series, whose characters could move from world to world as freely as most of us go around corners. Those characters are the ruling family of Amber, as conflict-ridden as any soap-opera family, and they are at war with the Courts of Chaos. Since Zelazny never revealed much about what created the world of his series, it has fallen to John Gregory Betancourt to do his best to read—or dare I say "channel"?—Zelazny's mind and add a prequel, a new trilogy beginning with **The Dawn of Amber**. A soldier named Obere is yanked from his world to encounter the House of Dworkin, a father, a family, a blood feud, and a destiny he never dreamed he had.

John Betancourt channels Zelazny? However he got it, he has the gift, and a legion of fans eager to learn how Amber came to be will be delighted.

I do not hesitate to warn you away from Tim Kenyon's **Ersatz Nation**. The

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

prose is wooden, the characters are both unpleasant and very thin cardboard, and the plot a strain on the most generous credulity.

The premise is an alternate Earth where computer science has lead to an all-encompassing "Mother Necessity" which rules the people with an iron digit. The people have Knowledge Implants, back-of-head sockets through which they upload their thoughts and memories to their Mistress every twelve hours. Unapproved thoughts are purged. Good thoughts are rewarded.

Mom has discovered our Earth and constructed a gateway through which Patrick Dolan delivers kidnapped Earthlings, even when he must kill a cop to do so (and never mind local law enforcement or accountability). He is a good little robot, albeit a rather muddled one, given to hallucinating friends and relations from home who have been Removed for disloyalty (but can't Mom control their thoughts? Never mind). Perhaps this is because his distance from Mom is letting him think for himself.

Meanwhile Selmar Rayburne, son of a former rebel, is trying to find out what is going on with his wife, who has been drafted by an elite Senior, Montgomery Dodd, for a mission that requires removing her Knowledge Implant, an operation that is not even supposed to be possible. Soon he will discover an underground, and when Dolan is reassigned to hunt down the missing Dodd, Rayburne's story will entwine with Dolan's.

To what end? I'll leave that to you to learn if you can struggle past the prose, characters, and plot.

In September 2001, I reviewed Kage Baker's novel *The Graveyard Game*, saying that she displayed an enviable array of writerly gifts for plot, color, character, and action in her tales of the Company, a future-based outfit that "recruits" throughout time, turns its new troops into immortal cyborgs, and sends them out to fill in the blank spots of history, collect treasures before they are lost, and defend the Company's interests. The first of those tales were short stories, and they—along with three stories never before published—are now available in **Black Projects, White Knights**. Her vision of the Company is not yet as fully fleshed out as in *Game*, and she seems to be playing with some of the potentials of her premise rather than working out a consistent vision of history, but the elements are there and her gifts make her play consistently interesting. Don't miss Facilitator Joseph's attempt to persuade the ill Robert Louis Stevenson to sketch out a story treatment ("The Literary Agent"), Literature Preservationist Lewis's wild flight across the Egyptian desert with a mummy case over his shoulder ("The Queen in Yellow"), the frustrated AI version of William Shakespeare ("The Dust Enclosed Here"), or the mad, mad California hermit who insists that "Lemuria *Will* Rise!"

I read this one with great pleasure.

Charles de Lint's brand of fantasy can be very warm and charming. The people in and around his city of Newford regularly encounter bogles, pixies, werewolves, crow girls, enchanted websites, and a dream world as real as magic. The secret of success is to do what good is within one's power. To defeat the devil, don't be greedy. When in need, use words or music (Celtic and American folk), and if you know the oak-king's daughter Meran, so much the better. And nowhere does he show this better than in his new collection, **Tapping the Dream Tree**.

A very different kind of pleasure than Kage Baker provides, but nonetheless the sort that makes the pages flip past far too quickly.

Kir Bulychev (Igor Mojeiko) is one of Russia's SF stars. In the late sixties, he began to tell tales of a little girl named

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Alice who raised a brontosaur, outsmarted space pirates, and so on. There were short stories, novels, films, and even comics, very few of which ever made it to the US market. Now, newly translated by John Costello, we have **Alice: The Girl from Earth**, containing "The Little Girl Nothing Ever Happens to," "Alice's Travels," "Alice's Birthday," and "The Rusty Field-Marshall." The prose is simple and the illustrations (apparently scanned from Russian originals) horrendously pixely, but the stories have a definite charm that may well appeal to small children.

But don't expect a girlish Harry Potter.

The Kansas City Science Fiction & Fantasy Society is launching a new small press operation, KaCSFFS Press, with Frank M. Robinson's **Through My Glasses Darkly**, a collection of five stories chosen from half a century of writing by editor Robin Wayne Bailey.

Robinson has been around for a while! I reviewed his *The Dark Beyond the Stars* a decade ago, but he is surely best known for his first novel, *The Power* (1956), which became a popular movie, and for the two novels he wrote with Tom Scortia, *The Gold Crew* (1980; it became the TV movie *The Fifth Missile*) and *The Glass Inferno* (1974; it became *The Towering Inferno*).

The oldest story here is "The Hunting Season," from the October 1951 *Astounding*, a tale of a world where criminals must flee human hunters, quite memorable enough to remain familiar even though my first encounter with it in some anthology is quite lost in the mists of time. A more smile-worthy tale is "Hail, Hail, Rock and Roll," in which fandom saves Woodstock—and the world.

I hope you can get a copy—but KaCSFFS only printed 326 signed and numbered copies of the first edition.

William Sanders is well worth reading, even when he isn't writing SF such as *J* (reviewed here January 2002) or *The Ballad of Billy Badass and the Rose of Turkestan* (October 2002). **Are We Having Fun Yet?** shows him at play with fantasy featuring American Indians and convinces me at least that he and Manly Wade Wellman would have gotten along very well if they had ever shared a campfire.

One of my favorites is "The Scuttling," which Sanders assured us so annoyed every magazine editor he sent it to that it first saw print in the 1999 e-book edition of this book. It features a thoroughly obnoxious fellow with delusions of superiority who, when his palatial seaside home gets overrun with cockroaches, has to hire a—gasp!—Indian medicine man. Natch, the "medicine"—a matter of chanting, drumming, and burning herbs—works and the cockroaches swarm into the sea. You see, says the medicine man, they're *German* cockroaches, and the medicine makes them want to go back where they came from. I'll come back in the morning to turn it off, after the Norway rats go too. It takes longer to work on bigger critters. You can pay me then.

Riighht! mutters the big-headed rich white-boy. As if I would pay a worthless gook Injun!

So the medicine doesn't get turned off.

So guess what happens to Mr. Obnoxious?

What do you call that medicine, Grandpa? asks the junior assistant medicine man.

"A start."

I loved it, and I promise I won't tell you the punch lines of any of the rest. You'll just have to read them for yourselves.

Enjoy!

The late L. Sprague de Camp (1907-2000) was always one of my favorite SF&F writers. Others loved him too, if his list of awards (Gandalf, International

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Fantasy, Grand Master Nebula, World Fantasy Life Achievement, etc.) is any indication. If you are one of his many fans, get a copy of **Aristotle and the Gun and Other Stories**. The title story, from the 1956 *Astounding*, is a classic exposition of the time-travel paradox, centering here on what would happen if someone tried to convince the ancient Greeks that experimentation was a useful way to gain understanding of the world. "The Gnarly Man," from the 1939 *Unknown*, considers how an immortal Neanderthal would fit into the modern world. "Nothing in the Rules," also from the 1939 *Unknown*, puts a mermaid in a swim meet. There are four more as well, one the classic "A Gun for Dinosaur," a pair of dragon tales, and "The Mislaid Mastodon," from the May 1993 *Analog*.

If you're not already a fan, these should set you to looking for such gems as *The Incompleat Enchanter*, *Lest Darkness Fall*, and more.

Darrell Schweitzer has been conducting interviews with SF&F writers for some thirty years and publishing them in assorted magazines. Most such material is as ephemeral as book reviews, of no interest to anyone a year after publication and even harder to find than that. But Schweitzer beats the odds with **Speaking of the Fantastic**, a collection of thirteen interviews conducted since 1987, each one capturing its subject at a particular moment in time and career. Think of them as verbal snapshots of Terry Bisson, John Brunner, Jonathon Carroll, Robert Holdstock, Ellen Kushner, Ursula K. Le Guin, Fritz Leiber, Marion Zimmer Bradley, Ray Faraday Nelson, Frederik Pohl, Dan Simmons, Lawrence Watt-Evans, and Jack Williamson.

Unfortunately, the book's production values demonstrate the defects of the present print-on-demand process, which seems to impel publishers to rush books into production without adequate proofreading (Wildside is hardly alone in this). The cover—front and back—lists Gene Wolfe (who isn't in the book), but not Williamson. The inside flap and the contents page lists Williamson, but leaves out Bradley and Carroll. And the text trails off into alphanumeric gibberish on p. 18.

If you want the snapshots, you'll buy, sigh, roll your eyes, and read with pleasure enough not to feel ripped off. But still . . . ■

We welcome your letters, which should be sent to Analog, 475 Park Avenue South, New York, NY 10016, or e-mail to **analog@dellmagazines.com**. Space and time make it impossible to print or answer all letters, but please include your mailing address even if you use e-mail. If you don't want your address printed, put it only in the heading of your letter; if you do want it printed, please put your address under your signature. We reserve the right to shorten and copy-edit letters. The e-mail address is for editorial correspondence *only*—please direct all subscription inquiries to:
P. O. Box 54027, Boulder, CO 80322-4033.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

BRASS TACKS

Dear Dr. Schmidt,

This is the first time I've written to you about a story in *Analog*. Edward M. Lerner's "Survival Instinct" [October 2002] is basically an engineering story instead of a science story. As I am an electrical engineer with a specialty in computers, it's harder to suspend my disbelief with an engineering-oriented SF story and Lerner certainly fails with this second installment of his bigger story sequence. The basic premise of this story is the creation of artificial life forms (ALs) that evolve and can pass from one computer to another using vectors similar to the ones used by computer viruses. That Lerner's story is clearly framed in our universe, on Earth, sometime in the near future doesn't help matters. Simple ALs do actually exist and they do evolve in much the way Lerner describes. It's the free-range nature of these life forms in the story that's bothering me. Lerner allows viruses and his ALs to infect anything and everything with a microprocessor. The Frankenfools virus infects a processor-based prostheses. Dr. AJ's AL infects supercomputers, workstations, and network gateways.

Sorry, it doesn't work that way (at least in this universe) because the existing substrate technology for this story won't support the premise:

1. Embedded products such as a prostheses, most network routers, gateways, and video-games do not use the same microprocessors as PCs, workstations, and supercomputers. Different processors employ different instruction sets and cannot run binary programs from other machines (at least not without emulation code). The one processor mentioned in Lerner's story, an Intel Pentium, is not a good choice for either a gateway or a prostheses for reasons of performance, power dissipation, and component price (the three P's of processor selection).

2. Embedded products don't employ the same operating systems as computers either. (Ditto supercomputers.)

3. Embedded equipment is often very short of memory and may have no disk storage at all, so these sorts of products make poor targets for computer viruses.

4. Real computer viruses in this universe spread by exploiting security holes in a particular combination of operating system and application program running on one type of processor. They don't jump from OS to OS and they never jump from one processor type to another.

Lerner can certainly posit that his cobra AL is so evolutionarily flexible that it can add modules to itself to run on any processor or operating system. However, such a large program probably won't fit in the memory or disk space of the embedded devices it's supposed to infect in his story.

I present all of the above as prelude to my request. If Lerner has a third story to sell you based on this premise, please think about the above issues before buying it. We don't know everything there is to know about physics, chemistry, and biology. This partial knowledge is one of the key elements that allows SF to work. However, human-engineered artifacts such as computers, worksta-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tions, routers, and embedded equipment are far less complex and far more knowable. I believe it takes a lot more work to spin a good yarn using such technological threads. Sorry, but I don't think Lerner succeeds in this case.

I believe you have written that if a particular story in *Analog* fails to please, just move on. Well, I read the story anyway (at least the first half) and then I moved on to the next.

By the way, I've been reading *Analog* since 1965. Thanks for making the publication such a worthwhile read.

My EE degree is from CWRU, a place I believe you know.

Steve Leibson
Santa Clara, CA

The author replies . . .

Mr. Leibson's objection boils down to: viruses and the artificial life (AL) creature are restricted to one computing platform (processor and operating-system pair), and no such pair is sufficiently widespread to make the story credible. A lesser criticism is the (mis) perception that viruses and the creature invade an unrealistically broad range of devices.

Second concern first . . . neither "Survival Instinct" nor its prequel, "Presence of Mind" (in the February issue), mention an attack on an embedded-processor device. A virus does attack the hero's experimental prosthesis (in the prequel)—but I never identified the processor within the arm. If Doug's research eventually leads to a mass-produced prosthesis, an embedded processor might be appropriate. In the story, of course, Doug is still doing R&D. During R&D, the key selection criteria for a computing platform are often availability of software-development tools and ease of reprogramming.

It's now common practice to develop on PCs the software of products that may eventually use embedded processors. Rehosting validated algorithms to a new processor is not a big deal. And rehosting may not even be necessary: mass-market, traditionally embedded-processor devices (e.g., video-game consoles, TV set-top boxes) increasingly use Intel chips and a version of Windows.

Are high-end routers and gateways like video-games? I think not. Many networking devices have massive computing power. Gateways are often standard computers dedicated to providing network security. As comm protocols, Internet-enabled applications, and cyber-attack methods grow in sophistication, gateways will continue to grow in capability (and computing power).

Now issue number one . . . is there a sufficiently ubiquitous processor to make the AL dangerous? On the desktop, there can be no question: Intel (and clone chips) won that battle. Server-class machines? Intel claims 88% market share (Infoworld, June 14th). Supercomputers? Lawrence Livermore National Labs is building an 11-teraflop supercomputer from clustered Intel Xeons. (The Xeon is a server-class extension of the Pentium family). As to software, we're nearing a two-OS world: Windows and Linux.

Remember Burroughs, Control Data, Univac, Honeywell, Digital Equipment, Prime, and Cray? All abandoned computer manufacture (or went entirely out of business) and limited or withdrew support for their proprietary operating systems since Mr. Leibson has been an *Analog* reader. Consolidation only accelerates: the economies of scale (and, some claim, monopoly power) from standardization are that significant.

While we're credential dropping, I have degrees in physics and computer science. I've worked in the computer field since 1973, in projects running the gamut from embedded processors to supercomputers.

Dear Editor,

I have not written to *Analog* since I wrote a letter to Mr. Campbell about wanting a sequel to "Dune" by Herbert,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

but I just wanted to say I *really* enjoyed that rip-snortin' old-fashioned *great* adventure story "Partner in Crime" [October 2002] by Rajnar Vajra. I never would have been able to understand it back in the first "Dune" days, but this is a today story, and it was one heck of a lot of fun.

The other stories were okay, of course, although "Thumbkin" was really a bit too silly, and "In Her Image" too depressing.

Jerry McMurry
Lakeside CA

The author replies . . .

Jerry, you made my day!

Mr. Schmidt,

This is my opinion of your view of SUVs, as expressed by your old buddy David Howowitz: "For leftists, cars, especially SUVs, are a polluting, annoying expression of individual freedom—a painful reminder that the longstanding efforts of social engineers to herd Americans into mass transit remain unfulfilled." By the time I waded through the first few paragraphs of elitist socialist crap, that was enough to convince me to read no further. It matters not what the conclusion was or the method you used to arrive there. A science fiction pulp rag is no place to spew your leftist crud. Find a college. They are all full of idealistic mushbrained people eager to soak up your bilge. You can drive a hybrid or an electric vehicle or none at all. Our founding fathers provided for the freedom of US citizens to do that or drive SUVs. You cannot use false information and faulty logic to force me to do anything. Feel free to walk up to ANWR, camp out there and guard against any oil drilling if you really feel compelled. Just don't tell me how to live.

Richard Oberlin
Chicago, IL

Quoting somebody else's opinion of "leftists" no doubt makes you feel good, and is far less trouble than thinking about or responding to what I actually said. However, should you ever get the urge to try the latter, you might start by noting that I didn't say a word about cars or mass transit. And, for the record, David Howowitz is not my "old buddy"—in fact, I don't even know (or care) who he is.

If you didn't read my editorial, you're in no position to comment on it. But thanks for providing such a beautiful example of what I was talking about.

Dear Sir,

When I signed on to the Internet this morning, I was left with a big question: Which came first, the story or the Japanese scientists?

There, facing me was a "headline news story" talking about cloning mammoths to wander around in a special "ancient mammal park" in Northern Russia. Apparently, certain scientists in Japan think that they can clone such mammals from the frozen mammoths that are found time to time in Siberia.

This afternoon, CNN is running a poll: "Would you go to a wildlife park with a mammoth on display?"

This morning I immediately thought of "Mammoth Dawn" by Kevin J. Anderson and Gregory Benford. I enjoyed the story very much, but, I submit, this is the closest in time that a story has come to the actual event.

Again I ask, "Which came first: the story or the scientist?"

George W. Brigden

Mr. Benford replies . . .

Mr. Brigden spots only the latest news on mammoth resurrection. Kevin Anderson and I have been aware of the gathering scientific momentum behind this idea for several years. Efforts to restore the Tasmanian "tiger" are even closer to success. I expect we will see several resurrected species within a decade, and many more thereafter as the methods get perfected. ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

CLASSIFIED MARKETPLACE

Analog March '03

Advertise in the world's leading science fiction magazines with our Analog/Asimov's combined classified section. Ad rates per issue: $2.95 per word (10 word minimum), $125 per column inch (2.25 inch maximum). SPECIAL INTRODUCTORY OFFER: Buy two ads and receive a third ad FREE. Send orders to: Dell Magazines, Classified Department, 475 Park Ave. S., 11th Floor, New York, NY 10016. Direct inquires to: (212) 686-7188; Fax (212) 686-7414 or email: classifiedads@dellmagazines.com

AUDIO/VIDEO

Audiobooks, Niven, LeGuin, Willis, Baxter, Egan, Sterling, Reed, Etc. www.audiotexttapes.com

BARGAIN DVD's at savings of 60% and more, in a variety of genres! www.BulldogBargains.com

BOOKS/PUBLICATIONS

Books, Sci-Fi & More. Low Prices. Visit www.jyeagerbooks.com

BUYING SCIENCE FICTION magazines, book collections. Will travel for large accumulations. Bowman, Box 167, Carmel, IN 46082.

CHRISTIAN SCIENCE FICTION print magazine and webzine. http://www.gateway-sf-magazine.com

CREATIVE SOLUTIONS INCLUDE REVOLUTION

Nova Albion: Science Fiction & Fact zine
Free catalog of all products Samples available
P A C, PO Box 2523, San Anselmo, CA 94979
www.pacificareacomm.com 415-259-0118

Novel: BEYOND THE TIME MACHINE; Mars Faces. http://us.geocities.com/bttm_book/

PUBLISH YOUR BOOK ONLINE, Third Millennium Publishing, a cooperative of online writers and resources, http://3mpub.com

www.rereadables.com. Online Used Book Store. Science Fiction, mystery and more.

COLLECTOR'S ITEMS

ORIGINAL ART for SF/F/H books, magazines, gaming +. Color catalog $15.00 (overseas $20.) Vintage illustrations always wanted. Worlds of Wonder, POB 814-Dell, McLean, VA 22101. www.wow-art.com

INSTRUCTION

SCIENCE FICTION WRITING CLASSES. Published SF authors teach Science Fiction Writing online at www.WritingClasses.com. Selected "Best of the Web" by *Forbes*. For FREE catalog call 877 974-8377.

MISCELLANEOUS

PLASTIC MODELS: Space, Sci-Fi, TV, movies, etc. Free Catalog, also buying/trading. Green's Dept. DL, Box 55787, Riverside, CA 92517. (909) 684-5300; (800) 807-4759; FAX (909) 684-8819; dl@greenmodels.com; http://www.greenmodels.com

PTCIL - Plan and invest your way to Space. www.poweroftenclubintlltd.org

STARFLEET, the International Star Trek Fan Association. 4000 Members worldwide. www.REGION2.ORG. REGION2RC@AOL.COM

PSYCHICS

SPIRITUAL PSYCHIC
HELPS RESTORE BROKEN LOVE
HEALTH • HAPPINESS • PEACE • REMARKABLE RESULTS.
CALL FOR PHONE READINGS
VISA/MC **(707) 579-5123** AMEX

UNUSUAL ITEMS

Alien Nature or Human Nature: Understand it all. The Truth? Can you handle the Truth? Find out at www.all2true.org and www.all2true.com. Also, you may find interesting things like back issues of *Analog, Asimov's* and *Aboriginal Science Fiction.*

HEAR ABOUT DOMINION DEFEAT! http://dcwi.com/~thiel. Visit SF Forums!

ANALOG SCIENCE FICTION AND FACT
Classified Department 475 Park Ave South, 11th Floor New York, NY 10016
Call: (212) 686-7188 Fax: (212) 686-7414 classifiedads@dellmagazines.com

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

UPCOMING EVENTS Anthony Lewis

14–16 March 2003
STELLARCON 27 (North Carolina SF conference) at High Point Radisson, High Point NC. Guests include—Bill Fawcett, Jody Lynn Nye. Registration—$30 until 1 February 2003, $40 thereafter. Info—Stellarcon 27, 5701 Running Ridge Rd., Greensboro NC 27407; (336)294-8041; info@stellarcon.org; www.uncg.edu/student.groups/sf3/stellarcon.htm

14–16 March 2003
TECHNICON 20 (Virginia area SF conference) at Red Lion Inn, Blacksburg VA. Guest of Honor—Janet Kagan. Info—info@technicon.org; www.technicon.org/tcon20

19–23 March 2003
24TH INTERNATIONAL CONFERENCE ON THE FANTASTIC IN THE ARTS (Academic SF conference) at Ft. Lauderdale Airport Hilton, Dania FL. Theme—What Might Be Going to Have Been: Dark Myths and Legends. Guest of Honor—Charles de Lint. Special Guest Writer—Ramsey Campbell. Guest Scholar—S. T. Joshi. Permanent Special Guest—Brian Aldiss. Registration—$85 until 1 January 2003, $100 until 15 March 2003, $125 at the door. Info—Katy Hatfield, ICFA Registrar, Box 10416, Blacksburg VA 24062; www.iafa.org

21–23 March 2003
AD ASTRA (Toronto SF conference) at Toronto Colony Hotel, Toronto, Ontario, Canada. Guest of Honor—Michael Moorcock. Artist Guests of Honor—Robert Gould, Alan Lee. Info—info@ad-astra.org; www.ad-astra.org

21–23 March 2003
COASTCON XXVI (Mississippi SF conference) at Mississippi Coast Convention Center, Biloxi MS. Registration—$30 until 1 January 2003, $35 to 1 March 2003, $40 at the door. Info—CoastCon, Box 1423, Biloxi MS 39533; (228)435-5217; coastcon@coastcon.org; www.coastcon.org

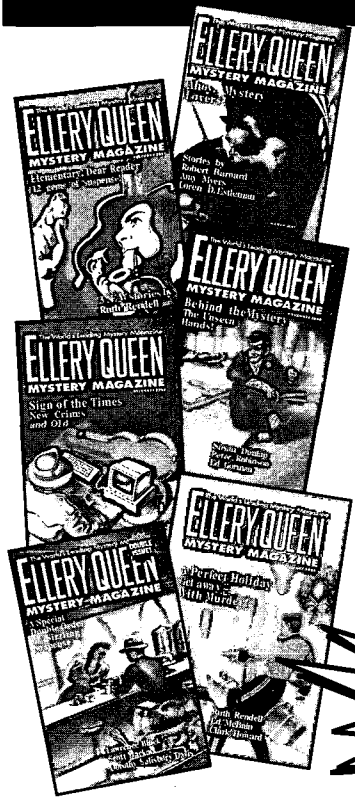
21–23 March 2003
LUNACON 2003 (NYC-area SF conference) at Rye Town Hilton, Rye Brook NY. Guests of Honor—Spider & Jeanne Robinson. Artist Guest of Honor—Rowena. Fan Guests of Honor—Joni & Todd Dashoff. TM—Susan de Guardiola. Registration—$37 until 27 May 2002, more thereafter and at the door. Info—Lunacon 2003, Box 3566, New York NY 10008-3566; info@lunacon.org; www.lunacon.org

28–30 March 2003
I-CON 22 (Long Island SF conference) at SUNY Stony Brook, Stony Brook NY. Guests include—James Gunn, Harlan Ellison, Julius Schwartz, James Morrow. Registration—$28 until 1 January 2003, $35 until 10 March 2003. Info—I-CON, Box 550, Stony Brook NY 11790-0550;(631)632-6045; fax—(631)632-6355; info@iconsf.org; www.iconsf. org

Attending a convention? When calling conventions for information, do not call collect and do not call too late in the evening. It is best to include a S.A.S.E. when requesting information; include an International Reply Coupon if the convention is in a different country.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

6 Issues, Just $9.97!



Subscribe today to *Ellery Queen's Mystery Magazine* and you'll get every intriguing issue delivered directly to your door.

Ellery Queen's Mystery Magazine leads the genre in critical acclaim with more than 50 major awards and nominations just since 1990! With suspenseful stories from the honor roll of mystery and crime fiction's great writers PLUS mystery limericks, poems and cartoons, book reviews, and an occasional mystery crossword!

SAVE 40%!

To order by charge card, call toll-free:

1-800-333-3311

Outside the U.S.A.: 1-850-682-7644

BY MAIL

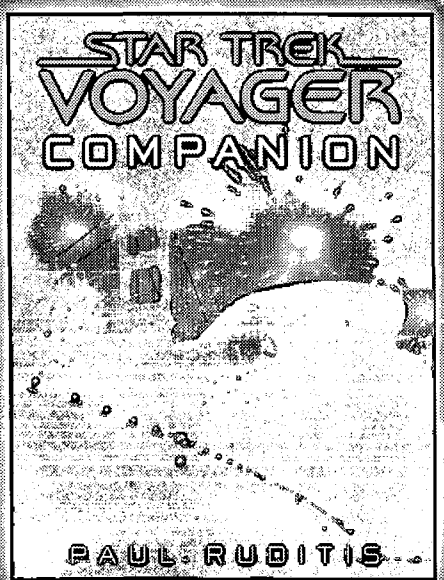
Ellery Queen, P.O. Box 54052,
Boulder CO, 80322-4052

Please allow 4 to 6 weeks for delivery of your first issue. Outside U.S.A.: Add $4 per year for shipping and handling. All orders must be paid in U.S. funds. *We publish a double issue once a year which counts as two issues toward your subscription.

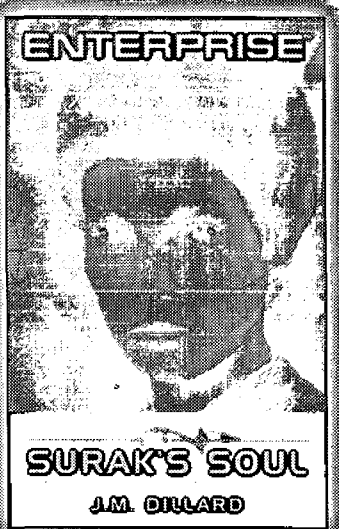
5E10

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The adventures in the final frontier continue!



Relive the seven years of unforgettable drama and explosive action in the Delta Quadrant with this essential guide to the sensational *Star Trek: Voyager* series!



Forced to kill in self-defense, *Enterprise*'s Vulcan Sub-Commander T'Pol forswears all violence—even on captain's orders. But will her choice now endanger the entire ship!

ALSO AVAILABLE THIS MONTH IN PAPERBACK:
Star Trek: The Original Series—Garth of Izar
Star Trek: The Eugenics Wars—The Rise and Fall of Khan Noonien Singh, Volume Two

STAR TREK BOOKS
Published by Pocket Books
A Division of Simon & Schuster

Visit www.simonsays.com/st and www.startrek.com

Available wherever books are sold.

™, ®, & © 2003 Paramount Pictures. All Rights Reserved. STAR TREK and related marks are trademarks of Paramount Pictures. Pocket Books Authorized User.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED